EDUCATIONAL REVIEW

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I

THE NEWEST PSYCHOLOGY[1]

The first impression of these volumes is of an amazing mixture of a horde of facts and opinions with a startling style. This brings as its corollaries a vast admiration for the zeal that has read so many books, manipulated so many questionnaire reports, speculated on so many problems, and a fear of being carried beyond critical judgment by the fluency and abandon with which President Hall describes his views. To this first impression is soon added a sense of wonderment as to what the author is at in his extraordinary chapters on sex questions.

The range of erudition, the adolescent fervor of style, and the unctuous comments on the facts and feelings of sex are not, however, the qualities of the books most profitable for discussion here. Readers of this journal will most desire to be informed concerning the author's judgments about educational theory and practice and the general principles upon which he bases them. These make up about a fifth of the contents, if we interpret the term education somewhat broadly. I shall review first the general principles, selecting rather those that are original with President Hall or are much emphasized by him.

A new ethics decides the aim of education. The actual end of evolution should be the moral end of conduct; we are to find out the probable future and encourage what advances it. In the long run those who survive are the morally fit. The aim of

[1] *Adolescence; its psychology and its relations to physiology, anthropology, sociology, sex, crime, religion, and education.* By G. STANLEY HALL, Ph. D., LL. D. In two volumes; xx and 589 and 784. New York: D. Appleton & Co., 1904. $7.50 net.

education is, then, for the race, to facilitate its natural evolution; and for the individual, to facilitate his natural development, but still more to make him the instrument for racial advance. Superior procreation and child-bearing, both in quantitative and qualitative respects, become thus a chief aim for education. It should be noted, however, that this general doctrine that what survives is good, that what will be ought to be, that fitness for this physical world is fitness for the kingdom of Heaven, is somewhat veiled in President Hall's mind, and so less repulsive than it appears in a bald statement. He is perhaps mainly interested in the sound and much-needed doctrine that improvement of the human stock is as important a human duty as improvement of the conditions of civilization and conduct in which that stock is to live.

The education of the feelings and propensities is held to be more important than that of the intellect. They are the fundamental human capacities and count far more than the superficial edifice of knowledge and habit, for they determine these. To love aright is better than wisdom. The author's implications are here again better than his words, for some of his concrete recommendations presuppose that conduct is the test of the feelings as well as of the intellect.

As a basis for race education President Hall believes in the transmission of acquired mental traits; indeed, goes farther and declares that unless one generation manifests in its individual development what its ancestors were, it cannot transmit the trait in question. That is, even if twenty generations of Smiths were, by nature or by training, efficient men of affairs, Smith No. 21 could not transmit this practical efficiency to a child, born when he was twenty and had not shown the capacity, whereas to a child born when Smith was forty and had become, say, a railroad president, he could. It is to be hoped that this second doctrine, which is perversely speculative, will not be taken seriously by President Hall's many disciples. It would be a pity to add to the already too potent fears of having children a conscientious dread of giving the early born less than their possible heritage of mental capacity! It is to be regretted also that in volumes so often emphasizing race improvement, the

obvious, demonstrated, and perhaps only cause, the selection of the better, should have been so neglected.

As a basis for the education of the individual we have, in addition to the accepted doctrines of the modifiability of body and mind, and of the inheritance from remote ancestry of the fundamental instincts and capacities and from immediate ancestry of some special degree of each, the author's favorite theory of mental recapitulation, of the reproduction in brief by the individual of all the mental history of his ancestors. The mind of any man is due to the superimposition of the mental traits evolved in the race behind him; as he grows up to mental maturity he passes thru stages that parallel the mental conditions that prevailed in his ancestors, epoch by epoch. To this is added a second favorite theory, that this order of development is desirable, that becoming a good and useful man depends upon having grown up thru this sequence of stages. For brevity we may call this the "Nature is Right" theory. To protect this theory against the objection that many native propensities, such as greed, disobedience, and cruelty, are obviously wrong, and that by the law of habit indulgence in these "stages" tends to make greedy, uncontrollable, and cruel men, President Hall offers a third theory, that the indulgence of a mental trait in early life often prevents the appearance of the trait in adult years. By having cruelty, for instance, in a mild form of the passion when a child, one "can be rendered immune to" it later. "Faculties and impulses which are denied legitimate expression during their nascent periods break out well on in adult life."

These three doctrines of recapitulation, of nature's wisdom, and of catharsis have been without honor in their own country, psychology, and the last has fared not much better at the hands of educational theorists. The modern empirical psychologist will, it is true, agree heartily that psychology must be comparative and genetic; that human nature is continuous with animal nature, that the fundamental instincts and capacities of the human mind can be traced back thru the animal kingdom as surely, if not as easily, as the human backbone. But he will deny as emphatically that after the age of three there is any

general or orderly recapitulation, or that the world of ideas of the distinctively human mind is as yet a matter of heredity at all. He accepts, that is, the genetic aim for which President Hall has so valiantly fought, but rejects his special account of the manner of mental growth as extravagantly speculative. If asked the practical meaning of the native impulses which we have in common with our mammalian ancestors, he will reply that they are raw material to be developed, redirected, aborted thru disuse, or inhibited by painful consequences, according as they minister to or hamper moral progress. He will refer the facts to which President Hall appeals for support to his theory of catharsis, to the general law that it is more economical to redirect a bad impulse than actually to annihilate it, or to the fact that certain desirable qualities are sometimes correlated with others that are undesirable.

Indeed, President Hall's own confidence in these doctrines seems to have weakened in recent years. He admits that the individual often distorts the racial order of development, and in his examples makes nothing of letting the child's mind be like that of a fish at the antenatal period when rudiments of gill slits appear, at the period of infantile delight in the bath, at the times of joy in wading and in swimming, and even at the period of life when we "can sit by the hour seeing and hearing the movements of water in sea or stream." Similarly recapitulation becomes little more than a vague bond between the child and his ancestry when the recapitulation of a monkey stage is made to account for the prehensile power of the newborn, the zeal for climbing of the infant and schoolboy, and the fact that "Dense forests soothe, hush, and awe the soul and feel like 'church.'" Far from letting children live according to the nature that is right, President Hall in this volume makes the years from eight to twelve years of accurate, technical accomplishment, paralleling the condition of the modern work-horse more than any animal strain in the ancestral line. The doctrine of catharsis is also resigned by being swapped in the course of the argument for a theory totally different, tho called by the same name; namely, that the child be purged of undesirable qualities by the

æsthetic contemplation of them, not by real participation. Of course, to read Bluebeard to purge the soul of cruelty, is quite another thing from biting one's brother or dropping the cat in the stove.

By the time that President Hall comes to recommendations for educational practice, these three theories become semi-rudimentary organs. Having served their purpose of exciting the reader and displaying a broad sweep of speculation, they give way to the general sagacity and appreciation of educational needs which the author so abundantly possesses. The hyper-logical reader who expects to find President Hall advocating the abolition of schools that nature may evolve unimpeded; or planning a curriculum with life in the swimming-tank for grade one, on the beach for grade two, up to life in a tree for grade five; or urging the teaching of cathartic lying and cheating in commercial courses, or the worship of brazen images in Sunday schools, will be disappointed.

The general theories have undoubtedly suggested many ideas about educational practice, but of these as a rule only those certified to also by the common ideals of happiness for the individual and usefulness to his community, and by the common principle of the formation of character by the law of habit, have been allowed expression in the book. The following summaries and quotations will give, so far as space permits, a notion of what the reader may expect from President Hall in the way of direct practical advice.

Size may or may not be desirable; so also of bodily symmetry; the "normal man" of gymnasium charts is not attractive; the large muscles of trunk and legs need more training than they now get; free exercise is far better than forced; to develop freely all the movements natural to man, to bring them under control, and last to train them to practical service, should be the work of physical and industrial education. Present traditional methods in physical education are too divorced from and too far behind physiology and psychology. "The best exercise for the young should thus be more directed to develop the basal powers old to the race than those peculiar to the individual. . . The best guide is . . . *interest*, zest, and spontaneity." Manual

training must rescue itself from its artificial restriction to folding paper, cutting wood, and bending iron, and take advantage of the educational opportunities of all the arts and industries; it must connect closely with science and become permeated with the spirit of the artist and zealous craftsman.

To prevent crime, education must offer chances for genuine self-government, create a sense of justice, of benevolence and of truth as skillfully as it now creates the money-sense. The contemplation of merit rewarded in history and in literature, especially in the case of the drama, is useful; a good scolding has great pedagogic value; youthful wrong-doers must not be looked down upon as aliens and evil-minded; many, if not most of their delinquencies come from impulses capable of useful direction; an æsthetic cathartic inoculation is a good preventive; "I incline to think that many childen would be better and not worse for reading, provided it can be done in tender years, stories like those of Captain Kidd, Jack Sheppard, Dick Turpin, and other gory tales."

Education in matters of sex must be given (tho not in schools, apparently) not only to prevent the sins of the ignorant, careless, or evil-minded, but also to prevent the morbid fears and reproaches of the innocent; sexual abuses may be lessened by appropriate instruction and by diverting the mind to other things; the most pitiful agonies about their supposed abnormalities and sins which are so frequently aroused in perfectly normal youths by newspaper advertisements, private circulars, and careless parental instruction should be put to flight by an hour's instruction in certain facts of anatomy and physiology; the menstrual function should be dignified, even sanctified, in parental discussion and public estimation. Pride in her sex and all its physiological consequences should be taught every young girl.

The study of the physical world, which is now made pedantic and dull by the imposition on youth of methods fitted for the training of investigators, should be a foremost division of school education; the sentimental and anthropomorphic point of view should be encouraged at first, then followed by a study of the applications of science, for instance, inventions for boys,

gardening and cooking and nursing for girls, and only later give way to pure science.

Love and marriage, of tremendous import to both individual and racial welfare, need as much preparation in education as do intellectual cultivation or the management of affairs. Concerning appropriate methods President Hall is not explicit.

Religious education should encourage the modern evangelical conversion, which is the transformation of selfishness into altruism; the Bible is the best religious text-book and its order is pedagogically correct; the best elements of other religions should be adopted by Christian teaching.

The social needs of adolescents should be met by clubs as secret as is practicable; present moral and religious organizations for youth are too narrow, too "goody-goody," and too rigid in the exactions of their pledges.

The intellectual training of high schools must be broadened to fit life's needs and adapted to the primary racial cravings of youth; the subserviency to college domination and the entrance examination must be abolished; the high schools may and should be the masters and prescribers; training should differ for those who leave school early and those who stay long, for those of abstract, scholarly capacity and those of practical, technical gifts, for girls and boys; the sexes should be far separated in space, curriculum, and treatment; girls in general should be from their early teens prepared specifically for child bearing and rearing; in a beautiful country home they are to learn to be healthy, accomplished, tactful, skilled in all the arts of home, and to be inspired to joy in their sex and its responsibilities. This education is for the true woman, the queen bee; the present college for women may serve for the training of the bachelor woman, the rival and companion of man, who, in spite of her many attractions, is but the worker ant. The American college for men should not insert itself between high school and professional school, nor become a hybrid with the latter; it must also drop its present pretensions to being the *Jupiter omnipotens* of education; and be satisfied with maintaining a leisurely social resort for those who have the time to spare,—an oasis of diffuse general culture and idealism in the desert of intensive and professional study; it should broaden, awaken, and elevate, rather

than intensify or energize intellect. Normal schools are criticised instructively and helpfully.

The general make-up and style of President Hall's book are such, it must be confessed, as to trouble even an enthusiastic reader. The richness of the summaries of fact and opinion does not atone for the failure to state clearly the probable answer to the main problem. At times irrelevant details blur the issue. Torrents of rhetorical enthusiasm over youth, love, genetic psychology, and other matters will irritate the scientific student and probably will befuddle the "general reader." One has to gyrate about from whales to vital statistics, to the lives of saints, to Jacksonian epilepsy, to the Hopi dancers until one prays for a range of knowledge equal to President Hall's to empower him to see the unity and organization of the book or any chapter in it. The order of motor development is illustrated by the changes in predilections for dolls. The plan of a girls' school leads to the following confession: "As a psychologist, penetrated with the growing sense of the predominance of the heart over the mere intellect, I believe myself not alone in desiring to make a tender declaration of being more and more passionately in love with woman as I conceive she came from the hand of God." Again and again the reader has to seek the argument of a passage like the following:

"Wedlock and the family are thus all-conditioning. They must be perfect because they are symbols or types of life. These masterpieces are the choicest products, so far as evolution is yet itself evolved, of the history of the world, which is at root a love story. Defect here destroys an organ of knowledge, for the larger institutions are created in its image and can be rightly known only thru it. Without children, love is incomplete. If woman is not satisfied, and grows mannish and assumes the functions of the other sex as her rights, it is because man is a failure and has not met her highest needs of body and soul, or both; and if he degenerates and either becomes feminine or relapses to his predomesticated stage and ceases to be primarily husband, it is because she no longer is primarily wife and mother. That religion and sex are in close psychological relation the world knows well. This is seen even in their abnormalities and in the acute attunement of the adolescent

soul to the former. This stage of life is the accepted time when the teachers of all faiths have found their chief opportunity, as appears at length in another chapter. Christianity has exercised its salvatory and soteriological power in the world because it rescued love by deploying it upon a higher plane and building a temple where vice makes a sewer. It is this upon which the claims of Christianity chiefly rest. It is this that makes the Jewish-Christian story, and it affects the very heart of human history, the record of the supreme achievement of our race thus far and our Bible its pedagogic masterpiece.

"The chief reason why our Bible is the best of all ethnic Bibles is because it is so deeply based upon genetic truth. The story of creation is full of ancient and subtle symbols of divine generation. The tale of Eden and the fall, whatever historic validity it may or may not have, is a masterly allegory of the first stage in the decadence of love. Abraham, a nomad sheik, was a breeder of cattle, and the promise was that he should be a breeder of men like the stars of the heavens for multitude. Circumcision was a hygienic measure of great efficacy, as we shall see, as well as a covenant. The long wars with the Canaanites and Baal worshipers were conflicts with phallicism, to the gross orgies of which the chosen people were always lapsing. All early Hebrew history shows that while man knows how to breed cattle, Jehovah could breed men, and it is a study of human heredity far more effective than Plato knew how to make it. The New Testament begins with the annunciation and conception from on high, and a nursery scene of moving bucolic power, while Islam hypostatizes only the former. We glimpse the hero, at the dawn of puberty, in the temple, turning, as is germane to gifted souls at this stage, to the great themes of religion. One at least of his temptations was probably fleshly, but gloriously overcome. He dies at the acme of prolonged adolescence, nubility and ideal perfection. Motherhood is idealized in the adoration of Mary, who has lost none of the charm of virginity, but combines the two into unique glory. God is our Father and heavenly Parent, and the Gospel is thru and thru a deification of love as the chief thing in the world. Paul's teaching culminates in his enthronement of charity, which is love fulfilling all the law. Celibacy and

asceticism were long thought the Christian service most *ad majorem Dei gloriam.* The logos or spirit of wisdom, which made the world, was spermatic; all the doctrines of conversion and customs of confirmation are prefigured in the nature and needs of adolescence. Liturgies are full of adoration and passionate declarations of love to God. Thus the great work of Jesus was, when all save love alone was dead, to create the world from this vital germ."

I have quoted thus at length so as to show not only the apparent lack of clear organization of arguments, but also the somewhat dangerous fluency and energy of the author's style.

It is also true that the book arouses the suspicion of its having been the result of the accretion of facts to nuclei of preconceived speculations, rather than of straightforward and scientific attacks upon definite problems. The immense natural gifts of its author do not hide the neglect of ordinary precautions in the methods of attaining and treating data.

Perhaps the best way to understand the general qualities of the book is to adopt, in reviewing it, the genetic method which it advocates, and study it not in its present adult form, but in all its stages. To these President Hall has elsewhere given some clews. He has said that his method of study has been to gather everything that has been written on any topic, condense it, and trust to Providence that truth will emerge from the storehouse of scrapbooks so formed. Vestiges of this stage remain in the *Adolescence,* which is in a sense only a bigger scrapbook. Hence its failure to leave the reader with a set of clear answers to definite problems. Again we know that intellectual curiosity in early manhood, like love, may attach itself too exclusively to one object, until, as the lover sees intimations of his beloved in every happening in nature, the thinker finds everything illustrative of his thesis. So President Hall has come gradually to use the universe as a background for the recapitulation theory. Again President Hall's teaching that the morals of youth need much social friction and responsibility may well be applied to the methods of the man of science. From a professor who is at the same time President and university, one may perhaps expect some few traces of the eccentricities which he has taught us to expect from an "only child." Finally, the

book and the ideas it presents are plainly in the adolescent stage. It has passed the common condition of psychological and pedagogical books, an arrest of development in the naïve curiosity of the child to find out this or that, or in his habitual memorizing and repeating traditional views. It falls short of the thoroly critical, bloodless, solid, organized product of science's maturity. It requires for its description precisely those phrases by which President Hall portrays adolescence. Sentimentality, a feeling that there are deep mysteries of ineffable value, much curiosity about sex and love, enthusiasm that needs veritable orgies of rhetoric to vent itself, religious fervor, even the passion for a new vocabulary of "burgeons," "cosmocatoptric" and the like—in all these it witnesses the right to be called ephebic science. More important, in its promise of new things, in its being, as President Hall would say, "the annunciation hour" of a psychology as broad as human life, in its zealous proving of all things, in its fine defiance to the decadent antiquities and respectabilities of philosophy—it is a book that means a growing period in science.

The fair-minded reader who has not attended too closely to the adolescent mannerisms will agree that psychology as a study of concrete human nature is well under way, that it has been handled in this book by a most gifted man, and that, altho the complexity of the problems makes the methods and conclusions of even such a man unsatisfactory, there is here as much promise for the science of mental life as in the masterpieces of analysis of the philosopher-psychologists. The fair-minded opponent will not deny the utility of President Hall's studies, but will seek by truer data and a more vigorous logic to improve them. Indeed I venture to prophesy that the future has in store for much in President Hall's book the fate characteristic of certain instincts. Just as these may function best by arousing some other instincts which later inhibit them, committing, as it were, psychological matricide, so the great service of President Hall's studies may be to inspire others which will replace their data and refute their conclusions, but which will none the less be their true offspring.

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II

GOVERNMENT IN AMERICAN UNIVERSITIES[1]

Our American universities are not like and are not to be like the universities of other lands. In considerable measure they have responded, and doubtless they will respond in larger measure, to the national character and thought. This is not saying that they have not much to learn from the universities of other lands; it is only saying that they are to promote the higher learning in line with American ideals, and not to fix educational values on the basis of age, or copy the features of Old World institutions without discrimination. An American university is not to exist in isolation. Americans do not believe in insularity, or self-containedness of any kind; they do believe in mixing and in co-operation. An American university is to attract the multitude, and aid to the limit of its powers all who are able to use the facilities which it commands. The only limitation upon this is imposed by that natural regard which a university must have for all other educational instrumentalities, and the need of orderliness in an educational system.

The business of an American university is to sustain democratic institutions and stand for the security and the opportunity of every citizen. It is not to teach without striving to advance the outposts of learning; it is not to potter over "research" without teaching. It is to inspire students and teach effectually; it is to combat ignorance, whether stolid, or capricious, or conceited; it is to unlock new truth. It will do more of each if all are done in the same rooms, and thru the same man. It is to develop a constituency, so that it will have standing and strength; and it is to serve the public. It is not only to make language more expressive, literature more enticing, and history more real, but it is also to make lands more productive, machinery more effective, and the life and thought of the crowd

[1] President's Address before the North Central Association of Colleges and Secondary Schools at Chicago, Ill., March 25, 1904.

more rational and true. If it is supported by taxation, as so many prominent American universities now are, it must be tolerant of democratic management, and it will quite possibly find that there are more advantages than disadvantages in it. If endowed by private benefactions, it must execute the purposes of the benefactors. But it must give way to neither democratic nor aristocratic ignorance. Learning and devotion would have the right to outrank money in determining the policies of a university, if there should be serious conflict between them. But there is so little, it is not in the reckoning. There is no room for narrowness, or bigotry, in one of our universities, and toleration and public spirit are all that are needed to win the support of the masses, or the special favor of men who have grown broadminded and generous thru the business experiences which have amassed a liberal fortune. Universities are growing great where the management stands for American ideals in living, in thinking, in doing, and commands the services of great teachers who keep in trend with the national life, and gain the respect of liberal souls who are charged with the care of liberal means.

But when the factors which go to make up a university have been brought together in one place they must be related together in a way which will assure order and generate energy. Rules of action must be observed to the end that learning may have the largest opportunity at every point of the system, and the departments must be so balanced that the whole will recognize the most vital demands of learning in its quarter of the earth, and give the largest support to all the details of the common undertaking.

It is an agreeable fiction, resulting likely from the exclusive life of the old-fashioned universities, that the organization of a university is wholly free from outside connections. The university is a world by itself. There is not a little satisfaction in this. It ministers to the conceits, from which even these heaven-endowed institutions are not yet wholly free, to sit in a board, or a council, or a senate, and feel that its votes settle the affairs of a world. It makes little matter if the world is not a large one: so long as it is just about large enough to tax the

resources of its engineers, they have superlative satisfaction in running it. Of course ruthless need will force the necessity of opening up connections with the outside now and then, but nothing short of a dead break between the factors of government, or a student revolution, is sufficient to menace the independence, or the serenity, of a university world.

The authority which is decisive in a university is that of the board of trustees. In an institution privately endowed this board is practically self-perpetuating: in one supported by taxation it has little to say about the succession. Each system has its advantages. It reminds one of Emerson's observation that government by an aristocracy is like the ship which rides the sea in safety and comfort to all on board until she strikes a rock, when she goes down with all hands; but government by a democracy is like a raft; it never sinks, but your feet are wet a good deal of the time. It is often more difficult to assimilate a freshman trustee than a thousand freshmen students. But trustee or student must assimilate; he cannot make the institution over; other people do not move out because he came. When he has really learned so much as that he becomes useful, and influential, and has a most enjoyable time.

A trustee is not to teach: he is not to supervise teachers: above all he is not to intrigue with teachers. He is to get revenues, and cause them to accomplish the purposes of the people who provide them. His functions are legislative, and not executive, or supervisory. Boards legislate; individuals execute.

The correct principle has, I think, been laid down by the Board of Trustees of the University of Illinois in a University Statute as follows: "The functions of the Trustees are legislative and not executive. The Board is to secure, as far as possible, the needed revenues for the University and is to determine the ways in which the University funds shall be applied. It is to map out University policy, but it must, of necessity, leave the execution of that policy to the executive agents. Such agents must be capable and, within the general line of policy laid down by the Board, they should not be interfered with. It is no function of

a Trustee to act as superintendent of University business, and it would be most reprehensible in a Trustee to have secret meetings and understandings with members of the Faculty, other employees or students, or to act in any way calculated to undermine or weaken the authority of its authorized agents. Such conduct would be subversive of all discipline and destroy the efficiency of the University organization. If the University does not prosper under the agents employed there should be a change of agents, but while in office the fullest confidence and support must be given them by the Board to enable them to obtain the best results. Any other course would not only be detrimental to the interests of the University, but would be a gross injustice to those employed.

The officer with the largest opportunities is the president. Modern educational conditions have uplifted the successful college president as modern economic conditions have developed the captains of industry. He gets both the most commendation and the most abuse. President Seth Low is reported to have said that it is the function of a college president to give and receive pain. That is true, but it is not all. It is his function also to develop and impress men and women. His office is encompassed with great perplexities, and he will suffer more than he can tell, but if he is true and just, and able to see things in a correct perspective, he will be upheld, and things will prosper, and students will multiply and grow strong, and out of it all will come satisfaction which none can describe.

The functions of a university president, as I conceive them, are also set forth in a Statute of the University of Illinois as follos: "The President of the university is the chief executive and responsible agent of the Trustees. He is to have constant watch and care over every University interest, and particularly the fullest responsibility in the instructional work. He is to be ready to recommend suitable persons for vacancies in the Faculty and, in case of an exigency, he is to fill a place so that the work of the University shall not be interrupted. He is to see that members of the Faculty are competent and right-spirited, and he is to hold all to the exact and full discharge of

their duties; and if, in his judgment, the necessity arises, he is to initiate steps for a change of instructors. He is to attend the meetings of the Trustees and take part in the discussion of matters under consideration. He is, of course, to follow the directions of the Board given in any particular matter; but it is neither possible nor desirable for the Trustees to direct most of the details of executive action; and so, in all matters, the President is expected to act with perfect freedom within the lines of general policy laid down by the Board, following a custom which has been commenced here, is usual in all large universities, and is imperative to secure their strong and healthy development." In 1876 the Board of Trustees of Johns Hopkins University set forth the duties of the President as follows: "The President of the University is the authorized means of communication between the Board and the various officers of instruction and administration employed in the University; it shall be his duty to consult with the Professors, in respect to the development of their various departments, and the general interests of the University; to determine the appropriate duties of the Associates and Fellows; and to exercise such superintendence over the buildings, apparatus, books, and other property as will insure their protection and appropriate use. In respect to these matters and all others which concern the welfare of the University, he shall consult frequently with the Executive Committee, and he shall attend the meetings of the Board of Trustees. Purchases, alterations, repairs, and other incidental expenses must not be ordered by any of the officers of the University without his previous assent, or the expressed authority of the Board." If the board is not to execute and supervise, the president is not to legislate. He may, he must, submit matters in proper form for legislation, but the board is to be as free in its sphere as he is in his; and he must accept what is done. It is not fair to make him responsible for getting money. If that is to be done, someone else should do it. But there are at least four things he will be charged with. He will have to see that the instruction steadily broadens, that it is balanced, and that it is virile and sane. He will have to secure a reasonable measure

of unity and harmony. He will have to see that the property of the university improves in physical condition, and grows in extent. And he will have to make sure that the expenses are within the revenues, and the balance on the right side. Even then he must not suppose he will be forgiven many of the shortcomings which he shares with all the rest of the world: and above all things he must never fall short in his stock of politeness and graciousness. He must find comfort in the reflection that if it taxes him on earth it refines him for heaven; it even fairly compensates the world for the unusual satisfaction his success brings to him. If he fails of success he won't be taxed so much, and he won't gain so much.

The principle that bodies are to legislate and individuals supervise and execute applies as much to the faculty as to the trustees. Confusion about it has produced more trouble and inefficiency than anything else I know of. If a board of trustees will make weaker appointments than a president, and will never remove a teacher for anything short of immorality, because in the board responsibility is divided, while the president knows that his own standing and the virility of his university depend upon his own discrimination and forcefulness, it is also true that a university faculty which is toying with questions of administration, and matters of discipline, is only standing squarely in the road of unity, of effectiveness, and of growth.

The main business of teachers is to teach; the main business of investigators is to search; and I am inclined to think that the teaching will be better, and the searching more successful, if these businesses are mixed. But in a large institution they do not mix well with executive functions, or disciplinary procedures. They are entirely consistent with legislative action concerning educational policies, and the experienced men and women in a university may, in a body, well discuss educational questions in their broadest aspect, and have a very influential voice in determining the educational policies of their institution. Indeed, it may be accepted at once that the general educational policies of a university must command the approbation of the people in the faculties, or there will not be effectiveness in carrying them out, and the way to secure that

approbation and effectiveness is to vest in the faculties a large influence in settling those policies.

University effectiveness rests upon departmental effectiveness. Department effectiveness turns upon the man at the head of the department. Each department must be given autonomy of its own, with resources and freedom to work out its success, or prove the inadequacy of the professor in charge. An administration is fatally wrong-headed if it does not give heads of departments very freely, and all others in its service as freely as it may, the materials to work with, and the freedom to use them just as rapidly, and a trifle more so, as capacity for safe and sound management shows itself. The measure of support to be given to departments is always a live and troublesome question in administration. On general principles the development of a university should be harmonious, but it may very well reflect the special interests of its constituents, if there are such, and it may quite as well excel in the lines upon which it finds that it has the most effective men. It is wholly sound to sustain, without absolute regard to the importance of subjects, the men who succeed roundly, without whining or claptrap, more liberally than the men who get on indifferently.

Doubtless every university hears the unceasing demand for less teaching, and more time for research, from its faculties. It is the searching for new truth which quickens the pulse beats of a university. Where genuineness is apparent, and the discovery of a grain of new truth seems even among the remote possibilities, ample time must be given for it. But it may as well be said that the time allowed for discovery, and the writing of books, is often excessive in proportion to the product, and sometimes the demand for time for research is, without the culprit knowing it, only a cover for physical and constitutional lassitude. The best teachers are likely to be the best searchers. The results in research are hardly likely to come from those who make the loudest claim for exemption from ordinary university duty. It is hardly fair that a whole university shall be taxed to afford time for research unless the lines of investigation which are being pursued are defined and understood. There must be some measure of accountability for time on the

part of the worker, or there cannot be much sympathy with him in his work on the part of all who have some share in supporting and managing the institution. And without this there is something wrong. People who lack strength, or adaptation, for research are too many and too urgent in American universities, and there must be some regulation of the matter in the interest of the smaller number who lack neither strength nor productivity in the field of advanced learning. It is a problem about which there is much sentiment, but one of which sound administration should not be afraid.

There is much misguided talk of self-improvement in universities. Self-improvement is a thing which should proceed without talking about it. Of course one who is not striving for self-improvement is not in the running at all. It must come, however, not from leisure, but from work. One who is not growing rich in the stores of his mind and heart thru the influence of severe work upon himself and who, with his work, does not find time for relaxation and pleasure, intellectual and otherwise, is not in the university reckoning.

Perhaps the most gratifying development in recent university administration is a more rational management of students. It used to be assumed that the administration monopolized the right to establish rules of conduct on very venerable lines and to do all the thinking for students. Of course it stirred resentment, with ground enough for foothold, and such student resentments soon mature into excesses and revolution. The giving over of the right of complete direction has narrowed the gulf and enlarged the companionship between faculties and students; and it has been accompanied by more healthful and therefore nobler ideals of character. The sense of self-responsibility has, as it seems to me, noticeably advanced in the student bodies of the larger universities in recent years. We have been going thru a transition stage upon this most important matter: we are not thru it yet; some have had grave misgivings, but it has come to be reasonably clear that we are coming out all right.

The one thing everyone in a university demands is freedom. There can be no sound administration without administrative

freedom. The executive cannot be strong if he will submit to wire-pulling. There can be no virile teaching without academic freedom. A university teacher who will subordinate his thinking and teaching to sinister influences is worthless. Where everybody in the management exacts entire freedom the students, who are men and women grown, will not be without it. And student freedom is vital to normal and healthful student growth. But administrative freedom does not include the right to be unjust; the executive must use his freedom wisely, or pay a swift and severe penalty. Teaching freedom does not cover the privilege of talking to the papers more than to the students, and even then insisting on talking like a fool. Nor does student freedom mean that one may go to the dogs without let or hindrance. All university freedom is to be exercised sanely, and with good purposes, or the place must cease to be a university.

The nation is to be congratulated upon the fact that the lines in American universities are setting for character quite as much as for scholarship. German university ideals are being repudiated, as must be the case in this country. As the students have multiplied, and as more freedom has been accorded them, there has been less lecturing and disciplining of the whole body for the sake of reaching a few, and the instrumentalities for safeguarding the few who stand most in need have been increased very effectually. Deans of undergraduates are doing more to hold the frail ones up to their college work, and to privately admonish them against the temptations which thrive in college towns, than was ever dreamed of under the old system of making everybody attend chapel and look dolorous. The hopelessly idle, or vicious, are being sent out of American universities more than ever before in the history of education.

The results are salutary, not only educationally, but religiously. There is a stronger religious life in freedom than under constraint. It is not only stronger, but more widespread. A larger percentage of students develop genuine, more healthful and prolific, religious feeling, where they are left in some measure to themselves in an atmosphere which encourages, than where everything is cut and dried for them

thru the hard-and-fast rules and the dogmatic preaching of an administration which forgets about the qualities and characteristics of live boys. Boys would rather be worked with, or left to work out things themselves, than everlastingly be preached at. Reason would suggest it, and ample experience proves that they will do about the right thing, even in the crowd, if given the free chance and rationally encouraged.

Student government is a broken reed. If actual, it is capricious, impulsive, and unreliable; if not, it is a subterfuge and pretense. It deceives no one, least of all the students. They see thru grindstones quite as soon as older people do. Above all things they want to know just about what may be counted upon. When they find out, if it is reasonable and right, they will square themselves with it. This has nothing to do with the plane of honor in a university. Other things fix that. And it is not established by rule, or settled in a day.

Much would be gained in university administration if teachers could learn that students are likely to judge teachers quite as quickly and accurately as teachers judge students. There are more students than teachers; they see the teacher at every angle, and they compare notes; they have full information, and their combined judgment is generally accurate. They will have treatment which intends to be fair and just, or they will make trouble, and they ought to. They will not tolerate emptiness, or stand bossiness, without resentments which they will make effectual, for they know that these things have no place in a university. They will not suffer the loss of substantial rights which seem small to the world, but mean much to them, unless they are taken away in due process by a tribunal which acts judicially and commands respect. Above all they will not be coddled by cake and ice cream. They abhor, and it is one of the strongest forces in university administration, the sneak, of whatever rank, who would sell out righteousness and the government of a university for student favor. So far as the students are concerned university management will go along smoothly enough after the students have tried out their men, and it has become settled that no one is going to be fooled, that freedom is going to be accorded, that decency

and manliness are going to be upheld, that there will be no fear in sending out of a university any who are there by mistake, and that whatever is done will be done with real interest in legitimate student affairs, with ready acceptance of the overwhelming trend of modern life, and always with gentleness, steadiness, firmness, and justice.

Government in an American university falls short if it does not exemplify the very best ideals of government in our democratic life. It must be strong enough to govern, and with no uncertainty about it. The corner stone of efficiency is absolute justice where rights are at stake, and relative justice, or the sanest wisdom, where rival interests, or policies, are involved. It is to sympathize with the aspirations of every human soul; it must give everyone his free chance; it must help every force which makes for the uplifting of the mass. It must stand for culture, not at second hand, but at first hand, thru work, and it must know that the meanest things in all the world are selfishness and conceit covered by the forms of polite society. It must not only uphold learning; it must sustain courage also. It must stand for things, and against other things. It must not only unlock truth, but it must also combat error. It must of course stand for freedom in the board of trustees, in the executive, in the faculty, and among the students; but just as much it must drive license out of every nook and corner, or there is small hope. And it had better measure license in different places with yard sticks which are somewhere near the same length. A student who hazes his fellow, or goes to excess over an athletic victory, deserves discipline for it; but a trustee who demands a place for his son, a president whose action turns upon favoritism or prejudice, and a teacher who runs to the newspapers for notoriety, or scoffs at things many people revere, is entitled to nothing short of a fight. A university is a place where freedom abounds, but a university is an institution which has something to do. It is not to drift; it is to do. It must take its freedom in its hand with a firm grip, and to go out to meet its responsibilities with confidence and cheerfulness. It must not separate itself from the world; it must get into the very heart of things.

It must bind together in a sympathetic whole all who believe in learning and in labor, and it must be a positive and aggressive force for quickening every good purpose and uplifting human society. It cannot accomplish this by chance, or by confused aimlessness. It may accomplish it thru a sane and sympathetic outlook, thru a government which has fiber and purpose about it, which stands for truth and scientific accuracy, which can marshal men and women, which can bring forces together, and then use them generously, yet modestly, for the good of all.

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III

SOME REFLECTIONS ON METHOD IN TEACHING[1]

The idea that there is any one way or method to teach arithmetic, or any other subject, is an assumption and nothing more. As much as can be asserted with safety is that illustrations should be employed long enough to enable the pupil to understand the rationale of the process and then pass to the abstract and mixed work. Illustrations, helps, concrete "object-thing arithmetic," may entirely overdo and surfeit the child's activity and weaken his curiosity. Too much is far more dangerous than too little. When a pupil has once learned one thing tolerably well, it is time to begin something else. There is just as much danger in undershooting as in overshooting in school work.

Arranging Ideas—The first question dates back in the dim past, and it is the one upon which the preceptor of Alexander the Great arranged his pupil's ideas so that they might not cause confusion for want of accurate disposition. It is believed that this method of clearness had been learned from Pythagoras, who was perhaps its founder and original teacher. This principle lies at the foundation of all that is really valuable either in the acquisition of knowledge or in the processes of valid reasoning. In order to set this principle clearly before you, it should be observed that every science can be resolved into a few elementary notions. The subject of geometry will serve as an illustration of this statement. It may first be resolved into its theorems; every theorem into its syllogism; every syllogism into its propositions; every proposition into its terms; every term then will stand for a definite conception which is an ultimate element of knowledge. In order to know geometry, one must first know what a theorem is, or what makes a theorem; to know what makes a syllogism, is to know

[1] From the Annual Report of the Superintendent of Schools, Kansas City, Mo., for 1903.

syllogisms; and one must know what a proposition is to know what propositions are. Just where these ideas end is where the elements of a science begin. That is why a learner, outside of mere reading and observation, must begin his real work at the beginning of a subject rather than in the middle or at the top end. Much depends upon the method one employs in approaching a subject, and in arranging and classifying what one gets hold of as part of the science to be pursued. This brings us to the pertinent inquiry as to what terms, which are simple and irresolvable things, represent. It appears that terms may represent three classes of objects—words, ideas, things. When they represent words merely, then the treatise would be grammatical or philological; if ideas, it would be metaphysical: and if things, then material or physical. However it may be assumed that words usually represent objects of thought thru the medium of ideas.

To give the foregoing remarks a more direct and practical bearing on the subject now under consideration, I shall make an application to English grammar. English grammar is a science, because it is based on the laws upon which the language, as a body of knowledge, is arranged and classified. The object of all science is the discovery of truth. Let us therefore examine somewhat minutely what is included under the term English grammar, and out of the pursuit of it as a science, what kind of a crop a learner may reasonably expect to harvest. As is well known, the science of English grammar is simply the science of the structure of sentences in the English language. This signifies that either in oral or written composition, the pupil makes a sentence, or what stands for a sentence, as he writes or talks. The sentence should be studied for the proper use of the language, for the laws of discourse, for the sake of translating ordinary or higher thoughts into good English, and, as a matter of intellectual strength and discipline, also the art of putting two or more sentences in a group to make a paragraph; and last, but not least, to analyze the sentence into its component parts. To do these things implies the acquisition of the knowledge of technical terms before one can really begin to study the subject from a scientific stand-

point. To give a more practical bearing to this observation, in one of the common text-books on English grammar, there are 163 technical terms employed. Beginning with the first letter of the alphabet there are twenty words as follows: Abbreviate, abbreviation, abridged, absolute, accent, active, adjective, adjunct, adverb, adverbial, article, assertive, auxiliary. Under C, we have capital, cardinal, case, climax, collective, colon, comparison, complement, complete, composition, conjugation, conjunction, connection, consonants, contraction, construction, co-ordinate, copula, correlative, criticism. I will conclude the list by naming the terms beginning with S, as, sarcasm, satire, semicolon, sentence, simile, spelling, stanza, subject, subjective, subordinate, subvocal, suffix, superlative, syllable, syncope, synecdoche, synopsis, syntax, synthesis.

Some of the terms apply equally well to other sciences, but when used in specific instances, each has a definite meaning in the connection in which it is used. As a learner masters a science step by step he is obliged to get the meaning of the technical terms so as to know and to understand what each word signifies when it is used. For instance, the word "analysis" is susceptible of several constructions, as may be shown in the following manner: 1, To analyze a word is to resolve it into its component elements; 2, to analyze a sentence is to reduce it to its essential elements, modifying elements, and connective elements, and to show what function or functions each element performs in the structure of the sentence: 3, to analyze a problem is to take it to pieces, and to show what each part represents; 4, in chemistry analysis refers to the process of reducing a compound to its simple elements. But there is a still more general sense in which the word is employed, as to analyze an argument, however complex it may appear; or when a crime is committed and its perpetrator is unknown and with few clews to work upon, then the detective must put them together so as to build up a theory, and he must analyze the theory to see whether it will be sufficient, in the last analysis, to account for all the facts. This is a species of analysis that demands a high degree of human ingenuity. One

can see from this illustration how a word may be made to do duty in various connections and each be a legitimate one. This is also a good example to illustrate the different definitions that may be given the same word, and to show incidentally how much care in the use of words is required to express nice and delicate shades of thought. The thinking process which enables the pupil to master what he does, and to think out the successive steps, is the one of greatest worth.

An Arithmetical Vocabulary—Picking up a recent arithmetic,—one that would average well among the best in this country,—I found, by counting, the number of purely technical terms contained and used in it to be 207, each term having a definite mathematical significance. The learner is not introduced to all these new words at once, but by degrees, and only a few are introduced at a time. The following will serve as an illustration: Abstract number, addition, aliquot part, alligation, amount, ampere, analysis, annual interest, annuity, antecedent, anti-logarithms, area of surface, arithmetic, arithmetical progression, assets, average of numbers, average of payments.

If, as in English grammar, we take the terms beginning with the letter C, we have cancellation, centrifugal force, check, commercial discount, commission, common denominator, common factor, common fraction, common measure of two or more numbers, common multiple of two or more numbers, complex fraction, compound number, compound fraction, compound interest, compound quantities, concrete numbers, consequent, consignee, consignor, continued fraction, co-operative bank, complete, coupon, creditor, cube-root of a number, currency, customs. Under the letter P are the following: Partial payment, partnership, par value, pendulum, percentage of a number, period, policy, poll-tax, power, premium, present worth, prime number, principal, problem, proceeds of a note, product, proper fraction, proportion, protest, pulley. For the pupil who has mastered the technical terms thoroly and who knows their meaning and application, the subject of arithmetic is no longer a sealed or mysterious volume. It is a part and parcel of his mental equipment of life, and his work in the

graded schools is to obtain the mastery of about 200 technical terms and know what each one means when he has occasion to use it.

Geographical Terms—These are more numerous than in any other of the ward-school studies, and consequently, as a study, it affords a good opportunity for the pupil to get a better glimpse of the world and its inhabitants than any other branch that is pursued in an elementary school. I am inclined to the opinion that there is very much less put into geographical terms by both teachers and pupils than in either of the other sciences mentioned. There is more vagueness necessarily in the use of geographical terms than in either grammar or arithmetic, and it is not so easy to reduce them to terms of the child's own thinking and daily experience as in the case of the other studies. The child's experience as well as the teacher's is limited to a definite part of the earth's surface, and the form, for instance, of a river, a mountain, a cape, or a plain, may not be a good type-form, and the conception will therefore be very inadequate. For the pupil, however, to have from five hundred to one thousand somewhat vague ideas of geographical concepts, will certainly be an immense gain to him, and if, say, one hundred terms out of the whole number be definite and clear and are firmly grasped, the pupil has a good foundation upon which to build a very substantial structure.

There are, however, certain definite phenomena, wherever he may be, that will appeal to his intelligence if attention be called to them as they lie spread out all around him—on the earth, in the air, and in the water. He can see the earth that he walks on; he can learn much about this particular part of it—the things that grow out of it, the people and the animals about him, and the sky overhead, both day and night; the trains that come and go with their treasures of lives and freight—all these and many other things he sees, and he can interpret some of them in his own way. He is not alone in this study, but among real things all the time. Geography thus opens up innumerable avenues for his thoughts to run out in, and the conceptions that he partially or wholly masters are of supremest worth to him.

I have called attention to three of the common branches, and what each, in part, may be made to yield to the pupil, if approached in the right spirit and studied understandingly.

Teaching English—When Emerson wrote that thoughtful address, "Fortune of the Republic," among the many excellent suggestions it contains is this one: "And what is cotton? One plant out of some two hundred thousand known to the botanist, vastly the larger part of which are reckoned weeds. And what is a weed? A plant whose virtues have not yet been discovered." With all our experimenting in teaching English, hardly a single valuable plant has been discovered, and it does not appear that we are likely to make very important discoveries, if we keep on in the direction in which the work is being pushed, except in various grades of the ward schools. In these schools, the pupils are generally given a fair start in speaking, reading, and writing the English language, and they are drilled in the mechanical structure of sentence building, and in letter writing; in some of the upper grades they have entered upon the elementary stage of appreciating the beauties of style in connection with the formation of sentences into paragraphs. Many of these pupils know, when a topic is announced, how to seize upon the more striking features, and in what order they should be arranged to present the most pleasing effect. A few broad facts in construction have thus been so thoroly grounded into their minds that it is an easy matter for them to express fairly well what they know and feel. This knowledge of guiding principles is not acquired by all. There are many persons who lack the power to co-ordinate their thoughts with the pen movements of the hand. Such as experience very great difficulty in making their thoughts run out and thru ink at the point of a pen, should not waste time in working at a performance which yields such meager results. It is clearly a waste of time to try to get the diffident and tongue-tied to become easy and fluent talkers. Intelligent, well-directed practice will help somewhat, but we ought to have sense enough to let each express his thoughts in his own way, and upon such topics as he chooses. Unexpected talent may be discovered accidentally, but there is usually

enough of the natural bent cropping out to indicate what may reasonably be expected. It is one of the great privileges the teacher or principal has to pick out what particular line of work one is best adapted to, and to keep him in touch with it. It was thus that the old Dominie discovered George Howe.

To avoid wasting time, the pupils that begin English in the high schools should be separated into two distinct groups, those who had received considerable training in reading authors, or parts of books, in the ward schools, and those who had none, or little, of such reading. Last year I heard several recitations in the first-year English in the high schools that could have been duplicated in several of the seventh-grade rooms in the ward schools, and it was clearly a loss of time and of interest for the first-year pupils to go over this work a second time. In all of the ward schools there is a marked tendency to study authors as a part of the mental equipment the pupils ought to have before they leave the ward schools. It goes without discussion after a pupil has read *The House of seven gables* in the lower school, that in taking it up again the following year in the high school the novelty is lost, and that the interest, if any at all, is at low heat, notwithstanding the effort of the teacher, however enthusiastic, to put life into the recitation, while the recitations in the high school usually consist of paragraph reading, interspersed with what each one thinks, supplemented with some verbal criticisms or historical or biographical references. The same general method is continued in a wider way upward thru the high-school course. All pupils, except when one is given a special line to read up, go thru the same routine; peep into the same books, read the same chapters, take the same notes, and are judged by the same standard of literary criticism. When I look at the ponderous mechanism employed to teach our boys and girls English in the high schools, I confess that I do not understand, if that method be the correct one, how the most graceful and brilliant writers of good English of the past and present ever learned, in their rugged offhand way, to write so as to be understood. Herbert Spencer in his very latest, perhaps last book, says that he never studied style. He never read authors to

learn style. He simply tried to write so as to be understood, and not to misrepresent or mislead the reader as to what he intended to say. His style is not always clear, yet he balanced his thoughts in his own mind and then he tried to say them in the most direct manner. There is no doubt but that he received his training in the grammars and rhetorics in use in England when he was a boy, and that he understood fairly well what they contained, and that unconsciously he was influenced, more or less, by what he read and assimilated.

We get similar experiences from the lives of the men and women who have left records of how they learned to write, and hardly one can be found who sat down and worked by rule in learning to write, just as no two persons read books or newspapers alike. There are certainly three objects in having our high-school boys and girls put in so much time studying English. Perhaps the greatest benefit, or the highest one, is to become acquainted with the best minds thru their written works, or to get their world view of questions. Another object is to perfect one's self in spoken and written discourse, and it is generally believed that this can be most effectively accomplished by habituating one's mind to the contemplation of standard literary works. This is somewhat after the plan of inducing "the suitors to bend Ulysses's bow." It does not succeed any better as an educational theory than for one to dress himself up in the cast-off clothes of a departed ancestor, and then secretly claim that he is that one. The third object is to teach one how to appreciate and how to interpret literary productions. Whether we are getting any better qualified writers than formerly, in proportion to the entire number who study above the grammar grades, is simply a matter of opinion. The quantity of reading that is done is in wholesale job lots, and with far less reflection put into it than when there was less reading, but more thinking on what was read. I am inclined to believe that should one read much less, but study his grammar and rhetoric very much more exhaustively, and then apply his knowledge of principles with skill to the subject-matter to be handled, his success would be more pronounced and his knowledge much clearer.

When I look back over my own training in composition and compare what little I then did with what the boys and girls are required to do now, under a mild sort of compulsion, it appears almost a miracle that I ever learned to write anything beyond signing my name. I do not now recall that I ever wrote, or attempted to write, more than two compositions. After studying quite thoroly Smith's *Grammar* and then a year later Bullion's *Analytical gramm*ar, supplementing it with Butler's *Grammar,* I was put into Quackenbos's *Rhetoric,* a book which gave me infinite pleasure, and I studied it, understood it, and knew tolerably well what it meant. The author told me what to do as well as what to avoid. I learned much about the specimens of English that were interspersed thruout the book on account of merits or blemishes. I studied carefully to satisfy myself whether the author was correct in his criticisms. This kind of work helped me to bring my mind into a critical attitude before ever attempting formal composition except writing a few friendly letters. I next picked up a copy of Blair's *Rhetoric,* which I still have with my marks and lines in it. This author gave a wider range to this fascinating subject than I had previously enjoyed. I became still more critical in regard to clearness of meaning and in the choice of words. While Blair occupied higher and broader ground, I did not get any better mastery of technical terms than I had acquired from Quackenbos. However, the one supplemented the other very well, and helped me to keep balanced the notions that were gradually assuming shape in my mind as a body of principles that could be worked into the foundation of my own style, should I ever decide to write. After this I borrowed Campbell's *Philosophy of rhetoric* and followed it with Hart's *Rhetoric,* which I liked as a concise text-book. Now, I began to read authors, to get hold of the truths or the morals they wished to communicate. I had learned rhetoric just I did grammar, without writing about it, but by thinking about it, and I am not convinced, even at this date, that it was not a good way to learn this subject. I have brought this personal phase of the subject forward to show that where there is a will there is a way to

do a thing, tho it may be a most awkward way. Could information be secured along this line, it would no doubt be found that a large majority of men and women of this country, who have been regarded as the best writers down to the present time, learned to write in a manner not unlike the one I have described. More real benefit may be derived from taking a letter to pieces that has been written by someone of recognized ability, and having it examined by an entire class, than to have each member of the class write a so-called essay, and then have each of these crude performances dissected and its weak points paraded and cried aloud from the teacher's chair. My idea is that outside of the mere mechanical directions for writing letters and describing simple events, it is better to build up first a systematic arrangement of ideas in regard to writing in general, and upon this foundation let the student measure his own work and decide what is the proper thing to say, and what words he will use to express the thoughts that should be put into words. A short letter, by a good writer, on some commonplace topic is an excellent way to begin epistolary correspondence, since it is the easiest and most common form of writing. I derived tenfold more benefit in regard to what was good and useful in writing from studying and balancing the work of others carefully in my own mind, than I ever did from all my own feeble efforts. This was one of the great helps from which I derived much benefit in studying Blair's and Campbell's *Rhetorics*. I would read over a letter, or an extract, and pass judgment on it. Then I would read what Blair or Campbell, or Quackenbos said, and thus I had a standard by which I could correct my own estimates, and I could see in most cases why my opinions were crude from a literary standpoint. I was thus continually measuring myself by the literary tastes of others, and it was only a year or two till I began to weigh literary productions without reference to the opinions of others. It soon became evident to me that certain matters should be stated in the very simplest and plainest language that I could employ in order to avoid misunderstanding,—that other topics gave greater latitude for the play of fancy, and so on for each kind of composition. For

instance, in mathematics, the language should be simple, plain, concise, just enough words, and not too many. The treatment depended upon the subject and how it ought to be handled.

Another thing that impressed me, and grew into habit, was the preparation of manuscript for the printer. In looking over letters by teachers wanting information about positions, or compositions written by high-school boys and girls, I have observed the greatest negligence in this respect. Only a few put their thoughts into proper shape. The one who does observe the few directions inserted in the text-books is an exception, even among college and university graduates. Much of the work is careless instead of careful. As a partial remedy for this deficiency, I would suggest that teachers of English, including those of rhetoric and literature, should secure from the daily papers in this city their printed rules and regulations governing the preparation of manuscript for publication. Each daily paper is a law unto itself, but the general plan is the same, and is more rational than any set of directions I ever found in a text-book. Truly it is an art for one to be able to prepare manuscript for the printer free from errors. This is the ideal toward which all pupils should work. It is not an impossible ideal, but it is one within reach of any pupil of average ability.

The last year or two has been a period of remarkable activity among the teachers of English thruout the country. There is a widespread feeling that the experiments recently tried in many institutions have yielded very inadequate returns, compared to the amount of time and energy put on the work. Committees and conferences have been, or are, at work on this subject in nearly every State or group of States. The immature scheme that spread so rapidly over the country ten or a dozen years ago, and which was embraced with so much enthusiasm by teachers generally, while possessing some merit, needs rectification all along the line.

A strong committee in Colorado undertook an investigation of the subject nearly two years ago, and as a result of their investigation a report was made in six sections covering the following points:

1. The general condition of teaching English thruout the State. 2. English in the graded schools. 3. English in the high schools. 4. Requirements for admission to college. 5. Recommendations by this committee. 6. Conclusions.

(*a*) Result: Present condition should be improved.

(*b*) The language work in the best graded schools was quite uniform in theory and in results.

(*c*) In general, the high schools give less than five recitation periods per week to the study of English.

(*d*) There is no discernible agreement as to the relative importance of composition and literature, nor as to the division of time between the two phases of work.

(*e*) There is little uniformity in the choice and arrangement of texts and selections upon which the work is based, or a generally accepted and well-defined method of handling the subject-matter and material of the department.

(*f*) The standard of attainments among the pupils, owing to the vague measuring stick demanded for college, was not uniform.

(*g*) No two schools place approximately the same emphasis on the same division of work.

This is a fair sample of what may be gathered from other States, and it represents fairly well the reports on English in the colleges and universities that are published by the professors during the first and second year of the student's work. The expenditure of force so lavishly made by teachers and professors to lower the instruction to the comprehension of the students has resulted in very unsatisfactory results. The bars may have been let down so very low that no serious effort was required to step over them. In order to simplify and to make easy the learner's progress, the work has been parceled out into very thin slices for daily recitations.

Two objects were intended to be accomplished by this course: to enable the student to use clear, vigorous, appropriate, and elegant language in conversation and in writing; secondly, that he might enjoy literature as a means of interpreting the thoughts, the feelings, and will power of the greatest writers,

and learn to look at the problems of life and destiny as others viewed them.

A Better Way—Before one can write with any degree of success, several points must be mastered, and these things I shall now proceed to explain. It has been previously mentioned that the usual method is to assign subjects, perhaps the same subject, to a class of from twenty to fifty boys and girls. and they are directed to read up, talk up, and fill up from various sources, and then to inject this unassimilated mass of crude ideas, faulty arrangement, flabby construction, and weak expression, on some sheets of paper, and label it an essay or a composition. The teacher takes the literary performance to her room and blue-pencils it, and in due time returns it to the author for him to contemplate in silence and his own wretchedness, but the chances are that he will never consider it seriously, and certainly not thru the teacher's eye. Suppose this process be reversed and that the first step be an exposition of how to collect material for a composition and how this material should be grouped under the one heading of material or ideas; then the kinds of material that seem to be closely related should be grouped under appropriate sub-headings. While one is collecting material his mind should be concentrated upon this species of work exclusively, and he should search intelligently and industriously for such ideas, and arrange them so that they can be easily referred to when needed. Suppose, now, that one has gathered all the material needed, perhaps more; he must next give his entire attention to assorting and rejecting whatever may not be appropriate for the present discussion. The selected portions that are to be used must now be arranged, and the order of arrangement is one upon which the writer must balance many things. He has now to consider especially his hearers or readers; where to put the strongest arguments and how one paragraph or topic should support and strengthen what is to precede or to follow it, and how connections or transitions are to be made, and above all things else, to make a good beginning and an impressive and strong ending,—these two ideas applying to the sentence, the paragraph, the chapter, or the essay. The question of just how to handle material after

it has been collected is, perhaps, the best test of the literary judgment that can be given. It affords a wide scope for the full exercise of one's taste, tact, skill, and literary insight. The material must be properly proportioned by giving to each paragraph, or subhead, its due space, weight, and position. These steps are preliminary, and each should be worked out in detail by the teacher and in drilling the pupils thoroly, relatively considered, on one step at a time till it is mastered. There now remains another factor, after the matter has been arranged and tabulated on slips of paper or cards, and that is: How shall the ideas be expressed? It is at this point that the high-school pupil is usually put to work instead of being prepared first for this kind of work.

Composition requires careful consideration in regard to clearness, simplicity, force, brevity, and economy; in short, it involves the entire subject of style, and how material ought to be handled most effectively, and to the very best advantage. In general, it includes all these rules, regulations, suggestions, and other helps that are usually given in the best grammars and rhetorics for using the English language correctly, elegantly, and effectively in the expression of thought, feeling, and action. The very opposite plan is almost universally pursued from the one indicated. The pupil is put to finishing work first, and out of this backward method he is expected to evolve a good rational system of composition writing. It is very much as if one were put to finishing a house before material had been selected, or the foundation laid, or the walls built, or the several parts of the framework fastened to one another. Above all things else, the pupil should be trained first how to plan a composition, how to collect and assort his materials, how to put its parts together, and how to finish it in an acceptable manner. By proceeding along the lines indicated the pupil will, I am persuaded, begin to understand how to go about the business in a sensible and rational manner. All these things must be learned, and it is far better to have pupils begin work on a sound basis than to spend four years on the wrong track, which the pupil is made aware of as soon as he leaves school, college, or university, and he is then thrown sprawled out on

his own resources, to pick himself up as speedily and as gracefully as possible.

I have endeavored to state the problem as I see it, and to suggest how it may be attacked and worked out in detail by those of you engaged in teaching the boys and girls in our high schools how to talk and write. To avoid confusion and contradiction, the pith of this discussion is to do the best thing at the right time, and to have the pupils write on subjects chiefly of their own choosing.

JAMES M. GREENWOOD

SUPERINTENDENT OF SCHOOLS,
KANSAS CITY, MO.

IV

SOME CHARACTERISTICS OF THE NEW YORK CITY HIGH SCHOOLS [1]

I shall preface my remarks on the New York City high schools by citing some general provisions of the revised charter which went into operation in 1902. This revision has brought about a revolution in the management of the schools. It has greatly lessened the powers and duties of the Board of Education and, to the same degree, enlarged the responsibilities and functions of the board of superintendents. The power of initiative in all matters relating to the course of study, selection of text-books, appointment of teachers, and the internal management of the schools is now lodged with the superintendents. The Board of Education concerns itself with the financial and business affairs of the schools, and merely has the power to confirm or reject those propositions of the board of superintendents that relate to the conduct of the schools as organized instruments of instruction. These provisions of the charter have far-reaching consequences. The educational interests of the schools are no longer in the hands of men primarily interested in politics, business, law, medicine, or theology. On the contrary, they are intrusted to experienced and well-trained experts who devote their lives to the study of education.

The City Superintendent is not only endowed with great authority as a chief-executive, but he also, as *ex-officio* chairman of the board of superintendents, has unparalleled power to determine and control all legislation that immediately affects the organization and equipment of the schools, the subjects of study, and the methods of instruction.

The newly revised charter has definitely removed the selection of teachers from the domain of political, social, and religious influences. No one can teach in the schools of the city

[1] A paper read before the Massachusetts Association of Classical and High School Teachers, at Cambridge, Mass., April 30, 1904.

who is not appointed from a graded list of candidates selected thru competitive examinations by a permanent board of examiners, and licensed by the City Superintendent. This license is temporary, and may be canceled for cause at the end of the first, second, or third year. After the expiration of three years of meritorious service, the license is made permanent and cannot be revoked without a formal trial, based on written charges of inefficiency or misconduct.

The board of superintendents requires that the quality of the service rendered by the teacher be determined twice a year, and placed on record in the office of the City Superintendent. The duty of making this rating is imposed upon the principal and a visiting superintendent, who make separate and independent reports. In the performance of his duties no principal has a more difficult, perplexing, or disagreeable task. I had almost said impossible task. And yet, this requirement of a definitely expressed judgment from the principal tends to promote the efficiency of both teacher and principal. Twice in every teacher's career this report has a direct effect upon his salary, since the annual increase is interrupted at the end of the fourth and ninth years, if the teacher's services are not officially pronounced meritorious.

In 1901 with the co-operation of the City Superintendent and some influential citizens, the teachers of the city secured a legislative enactment at Albany whereby a minimum-salary schedule was fixed by statute law. This schedule defines the classes of teachers and provides for an annual increment of salary. In the high schools there are, exclusive of principals, three classes of teachers with salaries as follows:

First Assistants:			
Men: minimum,	$2500;	maximum,	$3000;
Women: "	2000;	"	2500.
Assistants:			
Men: minimum,	$1300;	maximum,	$2400;
Women: "	1100;	"	1900.
Junior Teachers:			
Men: minimum,	$900;	maximum,	$1200;
Women: "	700;	"	1000.

Except in cases of interrupted promotion, the maximum salary

is reached by first assistants in five, assistants in ten, and by junior teachers in six years.

The revised charter into which the new salary schedule has been incorporated contains also a provision for pensions, which is a natural sequence of the life tenure guaranteed by the permanent license. After thirty years of service, twenty of which must have been in the City of New York, the disabled teacher may retire on an annual pension of half-pay up to a maximum of $1500.

A charter provision especially acceptable to principals, because they are primarily responsible for the character and success of their schools, is the law by which each principal has a seat and vote in the board of superintendents in all matters affecting the appointment, promotion, or transfer of teachers in his school.

The selection of text-books, apparatus, and general supplies is also placed in the hands of the principal. To be sure, he may not go outside the authorized lists, but these lists are so large that the principal could hardly have more freedom if he selected his books in the open market; to illustrate, there are on the list for 1904, 106 different Latin books, 76 histories, 508 English books, any one of which a principal may order for use in his school. There is, however, one limitation. A principal may not expend for such purposes in any calendar year, more than six dollars per capita, calculated on the register of the school in the previous November.

Up to this point I have spoken of charter provisions and general regulations that apply to all the schools, because they are to some extent unique, and because they are essentially introductory to a more specific characterization of the high schools.

The most obvious characteristic of the New York City high schools is their great size. In the three urban boroughs of Manhattan, The Bronx, and Brooklyn there are 11 high schools having in the aggregate 731 teachers and 20,815 pupils. The two schools located in the suburban boroughs have a total of 41 teachers and 810 pupils. The ascending growth of the high schools in New York may be seen when we note

that 11,590 pupils are now registered in the five high schools that have been established in Manhattan and The Bronx since September, 1897. Three of these schools now occupy new buildings constructed at an aggregate cost of $1,712,310.48. In Manhattan and Brooklyn three new high school buildings are in process of erection at an aggregate contract price of $1,544,000. This is exclusive of the cost of sites and equipment. The two suburban boroughs are also being provided with new high-school buildings, each of which will cost more than $200,000.

A second characteristic to be noted is the fact that the average time spent by a pupil in the high school is very brief. Of the total number now registered in the 11 schools previously mentioned, approximately 52 per cent. are enrolled in the first-year classes; 26, in the second; 13, in the third, and 7, in the fourth. There are various reasons for this abnormal mortality. Among them may be cited the commercial character of the population, the inability or unwillingness of parents to keep their children at school beyond the age of self-support, and the fact that many of the children admitted to the high school lack the ability or disposition to meet successfully the demands of the more rigorous training and continuous study in a secondary school.

A third characteristic is the semi-annual reorganization. Pupils are admitted from the elementary schools in September and February.

These three notable characteristics—the great size, the excessive mortality, and the semi-annual reorganization—have a long train of sequences that vitally affect the organization and management of the school.

Some of these are, perhaps, too apparent to need mentioning. The principal of such a school can no longer be a teacher. He is merged into an organizer and business manager. To be sure, he is responsible for the character and quality of the classroom instruction, and must therefore supervise the work of teachers and pupils, and maintain suitable discipline in the school building and on the school grounds; but his contact with the actual work of education, as it is carried on in the classroom, is at best very superficial. He must in addition, select, order,

and distribute text-books and supplies; see that pay-rolls are made out and teachers paid; attend to monthly, annual, and special reports; obtain substitutes for absent teachers; interview candidates seeking appointment in the school; conduct the correspondence; and stand at the gateway of the school to meet, with conciliatory explanations, uninformed and angry parents, visiting superintendents, members of the Board of Education, and other citizens and visitors interested in schools.

The proposition that one man can do all these things well in a great school cannot be entertained. These varieties of work must be systematized and delegated to others. Not only must clerks be appointed to do the work of the office, but, more important than all, capable teachers must be designated to aid in administering the general affairs of the school and to supervise the work of the several departments. In this way departmental organizations are created and become effective agencies for unifying the instruction of the several departments, and for securing the most skillful service from the teachers.

Under the conditions cited above, harmonious co-operation on the part of the teachers in a department is an actual necessity. To illustrate, there may be twenty divisions in the entering class of September. At the reorganization in February these twenty classes may be recombined into fifteen. Add to this the fact that it may be necessary to assign a new group of teachers to continue the instruction of these classes at the end of a half year, and you have a condition of confusion, unless the work of instruction has been carefully planned and systematically executed. The responsibility for this cannot be carried by the principal. It must be delegated to an experienced, tactful, and scholarly teacher in each department. The board of superintendents has issued no rules defining the function of the heads of departments, but the teachers selected to undertake this task may fairly be expected:

(*a*) To assume responsibility for the questions set for the quarterly examinations and the system of rating the answer papers, and, in general, to direct and supervise the examinations.

(*b*) To have charge of the examinations for the removal of

conditions, including the preparation of the questions, the apportionment of the work among the teachers, and the recording of the results in the record books.

(*c*) To determine, after conference with teachers, the relative degree of emphasis to be placed on the various phases of the work described by the syllabus, and to see that comprehensive oral and written reviews are given in the several classes with sufficient frequency to maintain a right ratio between the daily advance and the "long-range review."

(*d*) To keep themselves informed of the quantity, character, and frequency of the written exercises done under the direction of the several teachers; also to ascertain in what way the several teachers use the written exercise as a means of instruction.

(*e*) To give occasional tests in the several classes of their departments, to make frequent observations of the class work, and to keep memoranda of the same.

(*f*) To assist in providing instruction for classes in case of temporary absence of teachers.

(*g*) To examine candidates for admission to advanced standing in the school.

(*h*) To consult with the principal in defining the policy of the department, to keep him informed of the work done, and to perform such additional duties in connection with the department as may be expedient or necessary.

(*i*) To keep themselves informed as to the text-books, supplies, etc., on hand for use in their departments, and to submit to the principal estimates of additional quantities required for future needs.

(*j*) To designate topics for consideration at regular departmental meetings, and to call special meetings whenever the needs of the departments so require.

During the year of 1902 the board of superintendents caused to be prepared and adopted a syllabus in each subject of study laid down in the curriculum. It was thought necessary to define and describe the work to be done in each subject from term to term, because the number of sections in a class must be condensed at the end of each half year, because a pupil rarely completes a piece of work with the teacher with whom he began it,

because the migratory character of the population occasions frequent transfers from school to school, and because the manifest policy of the City Superintendent is to unify the work of the several high schools and to bring them to an approximately uniform standard of excellence.

It is too early to estimate the educational value of these syllabuses, but the preparation of them by selected departmental teachers has already had a marked influence upon the character of the instruction given in the schools. Slow teachers have been quickened, erratic ones restrained, and idlers set to work.

Another outcome of this movement towards unification has been the formation of departmental associations which are undertaking to study special problems of instructions and to make suggestions for the betterment of the schools. The clash and conflict of ideas and ideals, in this co-operative effort of syllabus-making, has been the more stimulating and fruitful for the twofold reason that the teachers concerned had been trained in colleges and universities located all along the way from Maine to California and had acquired their experience as teachers in schools as widely divergent in place and character.

It must not be supposed, however, that the teachers accomplished the task of syllabus-making on their own initiative. Back of it all was the City Superintendent. He it was who outlined the plan, appointed and directed the committees, held them to a satisfactory completion of their tasks, and, in person, gave the final touch of revision to their reports.

No sooner had the revised charter which removed the educational barriers between the five boroughs become operative than the City Superintendent demanded a uniform program of studies for all the high schools excepting the two commercial schools for boys, the technical school for girls, and the manual-training school for boys and girls. This curriculum is laid out on broad lines and is designed to prepare students for the city training schools for teachers, and for any of the colleges or technical schools in the Eastern States. And yet the proportion of required subjects, as distinguished from electives, is very large. No one can be graduated who has not had four years of successful work in English, three in history, three in mathe-

matics, three in a foreign language, one year of biology, and two additional years of sciences or a third foreign language for two years.

In the number of lessons per week this course of studies approaches the German standard. Pupils have 26 class exercises a week the first year (20 prepared), 25 the second year (20 prepared), at least 24 the third (21 prepared), and not less than 21 the fourth year (19 prepared).

It should be noted in passing that two of these exercises are taken in the gymnasium. Physical training, including organized sports, has become an essential part of the training given in the high schools. The new buildings are provided with large and well-equipped gymnasiums, running-tracks, lockers and shower-baths, and instructors in physical training are on the same salary schedule as assistant teachers of scholastic subjects.

Contrary to the apparent trend of the current in New England, the New York City principals are looking askance at the college entrance certificate system. At a recent meeting of the Principals' Association, it was the unanimous opinjon, subsequently indorsed by the City Superintendent, that the term, "certificate privilege," is a misnomer; that the colleges may fairly be expected to decide for themselves the difficult and perplexing question of whether applicants for admission are qualified for entrance; that the conditions under which a school or a principal may issue entrance certificates have been made, in most cases, intolerably humiliating; that hereafter they will not ask for or accept so-called certificate privileges, nor will they hereafter fill out or sign certificate blanks issued by the colleges; but that they will furnish to any responsible person or institution a complete transcript of a pupil's record in the school together with a certificate of good character.

I cannot bring this paper to an end without calling your attention to the City Superintendent's most recent and unique scheme for the uniform examinations for graduation from the high schools and for admission to the two training schools for teachers. This plan went into effect in June, 1903, and is based upon a system of numerical values. In general, a subject taken

four or five times a week for a year stands for 100 credits. For instance, English is given 300 credits; elementary mathematics, consisting of algebra and plane geometry, 300; English and American history, 100; any science, 100. Foreign-language study is classified as elementary, intermediate, and advanced, 100 credits being given to each, excepting elementary Latin and elementary Greek, which require two years' study and receive 200 credits each. The requirement for a diploma is that the student must pass in subjects aggregating at least 1200 credits. The percentage prescribed for passing, however, decreases as the number of subjects presented for examination increases beyond the minimum. All candidates must take the examination in English, but all other subjects are optional. A student is admitted to a preliminary examination at the end of the third year, if the principal of the school certifies that he is qualified to take the examination in subjects aggregating 500 credits.

Prior to these preliminary and final examinations which come twice a year, the City Superintendent requests each school to submit to him typical examination papers, which he turns over to the teachers designated to prepare the questions for examination. Such persons are selected in confidence, and are usually free from immediate contact with classes to be examined. From the suggestive material presented in this way by the schools, these teachers determine upon the examination questions, which are printed and sent to the schools, put up in sealed packages to be opened in the presence of classes thruout the city at the hour set for the examination. On the completion of a day's examinations, the teachers in charge send the answer papers, duly indorsed, to the office of the City Superintendent. All students under examination are known by number, and nothing appears on the pupil's papers to indicate the writer's name or the school from which he comes.

Committees of departmental teachers rate the papers in accordance with a scheme of values previously agreed upon, after a thoro discussion of selected papers, and report the results to the City Superintendent, who keeps in his office a complete and permanent record of the percentages attained by every candidate.

The standard of scholarship set up by these examinations last June was approximately that of the College Entrance Examination Board. An example of the parity of the two standards may be found in the fact that out of 441 papers written by candidates from the Morris High School for the C. E. E. B., and 1034 for the City Superintendent, the percentages of papers in the two series rated as passing, differed by less than one-half of one per cent.

It must not be assumed, however, that these examinations are compulsory. To be sure, no one can receive a diploma who has not satisfactorily completed the requirements of the course of study and passed the written examinations of the City Superintendent, but a certificate, duly signed and sealed, is awarded to any pupil who completes the course of study to the satisfaction of the teachers of the school.

To summarize what I have said, the board of superintendents in New York City is in virtual control of the schools; in addition to scholarship and insight, the City Superintendent has courage and executive ability commensurate with his great legal authority; the politicians have folded their tents and withdrawn from the ground occupied by the schools; the teacher's tenure of office, salary, and pension are insured by statute law; the principal has the largest liberty in the selection of text-books and supplies, and has all the influence he deserves in the appointment and promotion of his teachers; the great size of the schools, the rapid shrinkage of classes, and the semi-annual reorganization have caused the creation of departments and have made syllabuses a necessity; the sentiment in favor of encouraging the college to ascertain for itself the qualifications of the candidates that knock at its gate for admission is quite unanimous; and the City Superintendent's unique scheme of uniform written examinations for graduation is likely to have a far-reaching effect in setting the standard of scholarship for the public secondary schools of the Empire State.

EDWARD J. GOODWIN

ASSISTANT COMMISSIONER OF EDUCATION OF THE STATE OF NEW YORK

V

COLLEGE ENTRANCE EXAMINATION BOARD

FOURTH ANNUAL REPORT OF THE SECRETARY

THE EXAMINATIONS OF 1904

Organization

At the fourth annual meeting of the College Entrance Examination Board, held at Columbia University, New York, November 7, 1903, President Butler of Columbia University was re-elected chairman; Professor Tyler of the Massachusetts Institute of Technology was re-elected vice-chairman; and Professor Fiske of Columbia University was re-elected secretary. Dean Crane of Cornell University, President Woolley of Mount Holyoke College, and Mr. Croswell of the Brearley School were re-elected to serve with the chairman and vice-chairman as members of the executive committee.

At the same meeting the constitution of the Board was amended in the manner recommended at the meeting of May 16, 1903. Under the new constitution, any college or university in the United States which has a freshman or entering class of not less than fifty students may, by vote of the Board, be admitted to membership; and representatives of the secondary schools may be appointed by

The New England Association of Colleges and Preparatory Schools

The Association of Colleges and Preparatory Schools of the Middle States and Maryland

The Association of Colleges and Preparatory Schools of the Southern States

The North Central Association of Colleges and Secondary Schools.

Each association may appoint one secondary-school representative for every three colleges and universities represented in such association and admitted to membership in the Board,

provided, however, that one representative may be appointed upon the admission to the board of one such college or university, and provided further, that the number of secondary-school representatives appointed by any one association shall in no case exceed five. Representatives of secondary schools may also be appointed directly by the Board to the number of five.

During the year just past the membership of the Board has been increased by the admission of Harvard University of Cambridge, Mass., and of the Western Reserve University of Cleveland, Ohio. Furthermore, the New England Association of Colleges and Preparatory Schools has appointed to the Board as representative of the secondary schools Mr. William Gallagher of South Braintree, Mass., and the North Central Association of Colleges and Secondary Schools has appointed to the Board as secondary-school representative Mr. Edward L. Harris of Cleveland, Ohio.

Publications

In addition to the publications mentioned in previous reports of the secretary the following have been issued to date:

THIRD ANNUAL REPORT OF THE SECRETARY, . . SEPTEMBER 1, 1903

This report published in the EDUCATIONAL REVIEW for October, 1903, was printed also separately for free distribution among those interested in the work of the Board. It gives an account of the operations of the Board during the third year of its existence and is accompanied by statistical tables showing in detail the more important results of the examinations.

DOCUMENT No. 16, ... DECEMBER 1, 1903

This document contains the constitution and plan of organization of the Board, the list of subjects in which examinations were offered in 1904, detailed definitions of the requirements in each subject, the names of the examiners appointed to frame questions for use at the examinations of 1904, the time schedule of the examinations held June 20-25, 1904, and instructions to candidates and teachers. A copy of this document will be sent to any address upon receipt of ten cents in postage stamps.

DOCUMENT No. 17, ... MARCH 25, 1904

List of places at which arrangements were made for holding examinations June 20-25, 1904.

DOCUMENT No. 18, ... APRIL 20, 1904

Instructions to supervisors in charge of examinations.

DOCUMENT NO. 19, ... JULY 9, 1904

List of subjects in which examinations will be offered in 1905, time schedule of the examinations to be held June 19-24, 1905, and revised instructions to candidates and teachers.

EXAMINATION QUESTIONS OF 1904, ... AUGUST 30, 1903

This volume, published for the Board by Ginn & Co., may be obtained thru any bookseller for sixty cents a copy. It contains all the question papers of 1904, together with the names of the examiners who framed the questions in each subject and of the readers who rated the answer-books in each subject. It includes also a brief account of the organization and aims of the Board. It contains 112 pages and is provided with an index.

Administration

During the past year no important administrative changes have been made in the office of the secretary. It is very satisfactory to note that the regulations of the Board seem to be more thoroly appreciated and understood than in previous years. An inspection of the following statistical tables indicates, for example, that the applications filed by candidates were this year much more accurately and completely filled out than hitherto. Notwithstanding the fact that there was a considerable increase in the number of candidates for examination, the number of candidates failing to specify their residence diminished from 10 to 7; the number of candidates failing to specify their age diminished from 23 to 10; the number failing to indicate their preparatory school diminished from 71 to 28; and the number failing to indicate the college of their choice diminished from 109 to 104.

It is a matter of no little difficulty to impress upon candidates and their teachers the necessity of complying with the regulations of the Board. Two years ago it was found necessary to adopt a rule whereby candidates failing to file their applications on or before the dates specified by the regulations of the Board should be required to pay an extra fee of five dollars. Last year this extra fee was collected from 106 candidates. Notwithstanding the fact that announcement in regard to the extra fee required in the case of belated applications was made in the most conspicuous manner in the catalog of every college and university interested in the work of

the Board, there were received this year no less than 133 such applications.

The work of the Board has continued to enjoy the co-operation of important institutions scattered thruout the country, even in cases where they have not as yet become members of the Board. The following institutions, not members of the Board, placed at its disposal accommodations and supervision for examinations this year:

Hampden-Sidney College
Northwestern University
Ohio State University
Tulane University of Louisiana
Vanderbilt University
Washington and Lee University
Worcester Polytechnic Institute.

In this connection should be mentioned also that the school authorities of Frankfort, Germany, furnished the Board with accommodations and supervision for examinations held in that city.

It may be proper at this point to call attention to the fact that the authorities of Oxford University have at present under consideration a proposition whereby the examinations of the Board may be recognized, at least in the case of American students, as a satisfactory substitute for the matriculation examinations, or "Responsions," of that institution. If this proposition is acted upon favorably, American candidates for Rhodes scholarships will become eligible for appointment upon passing the Board's examinations, and it will no longer be necessary for Oxford University to hold special examinations for such candidates.

The Board's examinations were used at a number of points as a basis for the award of competitive scholarships. Especially noteworthy were the award at New York City of the Pulitzer scholarships, for which there were fifty candidates, the highest percentage (91 per cent.) being obtained by William Schreiber, a pupil of the De Witt Clinton High School, and the award at Memphis, Tenn., of a competitive scholarship offered by the Intercollegiate Alumnæ Association,

this scholarship being won by Miss Elizabeth Young of St. Mary's School, Memphis, Tenn. Miss Young, who obtained an average percentage of 83, was a candidate for admission to Vassar College.

Definition of Requirements

The Board's requirements in mathematics have been modified by the adoption of the recommendations made by a committee of the American Mathematical Society. The recommendations having been adopted by almost every college and university in the United States, the holding of mathematical examinations in the future will be considerably simplified. Under the new formulation, elementary algebra will include the arithmetical and geometrical progressions, but will exclude permutations and combinations and also logarithms.

The Board's requirements in Latin and Greek have been the subject of careful consideration on the part of a special committee. The committee has already recommended the dropping of the examinations in Latin *h*, *i*, *k*, and in Greek *d*, *c*. It has recommended also the establishment of two new examinations, one in the translation at sight of Latin poetry, and the other in the translation of Homer at sight. These recommendations have met with the approval of the Board, and will be put into effect without delay. Certain other recommendations, affecting principally the examinations in Latin and Greek prose composition, are still under discussion.

Work of the Examiners

The examiners for 1904 were appointed not later than October, 1903, so that the work upon the question papers began very shortly after the beginning of the college year. The full list of examiners for 1904 was as follows:

BOTANY

William Francis Ganong.....Professor of Botany, Smith College
University of New Brunswick, A. B., 1884, and A. M., 1886; Harvard University, A. B., 1887; University of Munich, Ph. D., 1894.

Henrietta Edgecomb Hooker, Professor of Botany, Mount Holyoke College
Syracuse University, Ph. B., 1888, Ph. M., 1888, and Ph. D., 1888.

Louis Murbach..Teacher of Biology, Central High School, Detroit, Mich.
University of Michigan, Ph. B., 1884, and B. S., 1890; University of Leipzig, Ph. D., 1894.

CHEMISTRY

Leverett Mears.....Professor of Chemistry, Williams College
Amherst College, A. B., 1874; University of Göttingen, Ph. D., 1876; Williams College, M. A., 1888.

Charlotte Fitch Roberts.....Professor of Chemistry, Wellesley College
Wellesley College, B. A., 1880; Yale University, Ph. D., 1894.

Albert C. Hale.....Teacher in the Boys' High School, Brooklyn, N. Y.
University of Rochester, A. M., 1872; University of Heidelberg, Ph. D., 1880.

DRAWING

Alfred Dwight Foster Hamlin, Adjunct Professor of Architecture, Columbia University
Amherst College, A. B., 1875, and A. M., 1885.

Charles L. Adams, Assistant Professor of Drawing and Descriptive Geometry, Massachusetts Institute of Technology

Manton Elwell Merchant, Teacher of Drawing, Erasmus Hall High School, Brooklyn, N. Y.

ENGLISH

Francis Hovey Stoddard....Professor of English, New York University
Amherst College, A. B., 1869, and A. M., 1886.

Edward Everett Hale, Jr., Professor of Rhetoric and Logic, Union College
Harvard University, A. B., 1883; University of Halle, Ph. D., 1892.

Helen Josephine Robins, Teacher in Miss Baldwin's School, Bryn Mawr, Pa.
Bryn Mawr College, A. B., 1892.

FRENCH

Adolphe Cohn, Professor of the Romance Languages and Literatures, Columbia University
University of Paris, A. B., 1868, LL. B., 1873, and A. M., 1874.

Adolph Rambeau, Professor of Modern Languages, Massachusetts Institute of Technology
University of Wittenberg, A. B., 1871, and Ph. D., 1877.

Isidore Henry Bowles Spiers, Teacher in William Penn Charter School, Philadelphia, Pa.
Oxford University, B. A., 1878, and M. A., 1880.

GEOGRAPHY

Albert Perry Brigham, Professor of Geology and Natural History, Colgate University
Colgate University, A. B., 1879, and A. M., 1882; Harvard University, A. M., 1892.

Florence Bascom....Associate Professor of Geology, Bryn Mawr College
University of Wisconsin, B. A. and B. L., 1882, B. S., 1884, and M. A., 1887; The Johns Hopkins University, Ph. D., 1893.

William Henry Snyder, Teacher of Science, Worcester Academy, Worcester, Mass.
Colby College, A. B., 1885; Harvard University, A. M., 1888.

GERMAN

Marion Dexter Learned, Professor of German, University of Pennsylvania
Dickinson College, A. B., 1880, and A. M., 1883; The Johns Hopkins University, Ph. D., 1887.

Hans Froelicher, Professor of German, The Woman's College of Baltimore
University of Zürich, Ph. D., 1888.

Thomas Stockham Baker, Teacher of Modern Languages, The Jacob Tome Institute, Port Deposit, Md.
The Johns Hopkins University, B. A., 1891, and Ph. D., 1895.

GREEK

Herbert Weir Smyth.....Professor of Greek, Harvard University
Swarthmore College, A. B., 1876; Harvard University, A. B., 1878; University of Göttingen, Ph. D., 1884.

Edward Henry Spieker, Associate Professor of Greek and Latin, The Johns Hopkins University
The Johns Hopkins University, A. B., 1879, and Ph. D., 1882.

Robert Porter Keep, Principal of Miss Porter's School for Girls, Farmington, Conn.
Yale University, B. A., 1865, and Ph. D., 1869.

HISTORY

William Isaac Hull.....Professor of History, Swarthmore College
The Johns Hopkins University, A. B., 1889, and Ph. D., 1892.

Charles Francis Adams Currier, Professor of History, Massachusetts Institute of Technology
Harvard University, A. B., 1887, and A. M., 1888.

Elizabeth Briggs, Teacher of History, Dr. Julius Sachs's Collegiate Institute, New York, N. Y.
Graduate of Harvard Annex, 1887; Cornell University, A. M., 1891.

LATIN

Charles Edwin Bennett.....Professor of Latin, Cornell University
Brown University, A. B., 1878.

John Howell Westcott, Musgrave Professor of Latin, Princeton University
Princeton University, 1877, A. M., 1880, and Ph. D., 1887.

William Henry Klapp, Head Master of the Episcopal Academy, Philadelphia, Pa.
Harvard University, A. B., 1871; University of Pennsylvania, M. D., 1876.

MATHEMATICS

Frank Nelson Cole.....Professor of Mathematics, Columbia University
Harvard University, A. B., 1882, A. M. and Ph. D., 1886.

Thomas Cushing Esty..Professor of Mathematics, University of Rochester
Amherst College, B. A., 1893, and M. A., 1897.

Arthur Schultze, Teacher of Mathematics, The High School of Commerce, New York, N. Y.
University of Kiel, Ph. D., 1887.

PHYSICS

Edward Leamington Nichols....Professor of Physics, Cornell University
Cornell University, B. S., 1875; University of Göttingen, Ph. D., 1879.

Francis Cuyler Van Dyck, Professor of Physics and Experimental Mechanics, Rutgers College
Rutgers College, A. B., 1865, and A. M., 1868; Union University, Ph. D., 1888.

Frank Rollins, Teacher in the Morris High School, New York, N. Y.
Wesleyan University, A. B., 1889; Columbia University, Ph. D., 1902.

SPANISH

Hugo Albert Rennert, Professor of Romanic Languages and Literatures, University of Pennsylvania

University of Pennsylvania, B. Sc., 1879, LL. B., 1881, and M. A., 1890; University of Freiburg, Ph. D., 1892.

Fonger DeHaan....Associate Professor of Spanish, Bryn Mawr College

The Johns Hopkins University, Ph. D., 1895.

Camille Fontaine, Teacher of Romance Languages, The High School of Commerce, New York, N. Y.

University of Paris, B. L., 1874, B. D., 1876, and L. D., 1877.

The Committee on Revision

The five representatives of the secondary schools met on Saturday, February 20, to make a preliminary inspection of the questions submitted by the examiners. On Friday, March 4, the committee on revision, consisting of the representatives of the secondary schools together with the thirteen chief examiners, met and spent the entire day in the discussion of the questions. As a result several of the question papers were modified in important respects. The members of the committee on revision all felt that their discussion could not fail to be most beneficial to the question papers. An examination of Table VII, which follows at a later point in this report, would appear to justify such an opinion.

The Examinations

The examinations were held during the week beginning Monday, June 20, in accordance with the time schedule printed on pages 50-51 of Document No. 16. The total number of candidates examined was 1817, an increase of 197 over the number examined in 1903, and of 455 over the corresponding number for 1902.

The candidates attending the Board's examinations in 1903 and 1904, if classified according to the points at which they were examined, are as indicated in the following table:

	New England	Middle States	South and West
1904.....	292	1247	280
1903.....	224	1026	370
	+68	+221	−90

An inspection of this table shows that the number of candidates examined in the New England States has increased by

30 per cent., the number of candidates examined in the Middle States has increased by about 21 per cent., while the number of candidates examined elsewhere in the United States has decreased by about 24 per cent.

The candidates classified according to the institutions that they expected to enter are as indicated in the following table:

	New England	Middle States	South and West
1904.....	436	1247	30
1903.....	314	1183	14
	+122	+64	+16

From this table it appears that the increase in the number of candidates expecting to enter the New England colleges and universities amounts to about 40 per cent., while the increase in the number of candidates expecting to enter other institutions is comparatively unimportant.

The most striking characteristic of the tables given above is the decrease in the number of candidates from the South and West. The writer begs to suggest as a possible explanation that somewhat depressed business conditions thruout the country are deterring students in the South and West from seeking an education at the Eastern colleges and universities.

The examinations were held at 139 points, of which seven were in Europe, as shown in the following table:

TABLE I

Places at which Examinations were Held June 20-25, 1904, and the Number of Candidates Examined at each Place

North Atlantic Division

Maine:		Massachusetts:	
Bangor	1	Boston	37
Portland	20	Duxbury	6
	— 21	Fall River	1
New Hampshire:		Great Barrington	7
Concord	12	Groton	4
Exeter	8	Hudson	3
	— 20	North Adams	7
Vermont:		Norwood	7
Burlington	1	South Hadley	17
North Bennington	1	Springfield	29
Saxton's River	6	Wellesley	13
St. Albans	1	Worcester	12
	— 9		—143

Rhode Island:
- Providence 3

Connecticut:
- Bridgeport 19
- Hartford 21
- Lakeville 6
- New Haven 15
- Stamford 28
- Washington 7

— 96

New York:
- Albany 9
- Binghamton 6
- Brooklyn 77
- Buffalo 17
- Elmira 5
- Gloversville 2
- Hamilton 0
- Ithaca 28
- Lake Placid 1
- Malone 1
- Manlius 4
- New Paltz 1
- New York:
  - Barnard College..... 227
  - Columbia University.... 483
  - New York University:
    - University Heights.... 8
    - Washington Square... 35
- Poughkeepsie 20
- Rochester 15
- Schenectady 3
- Sea Cliff 1
- Southampton 2
- Syracuse 7
- Utica 6
- Watertown 1
- Yonkers 23

—982

New Jersey:
- Asbury Park 5
- Bordentown 33
- Jersey City 14
- Morristown 8
- Newark 58
- New Brunswick 9
- Paterson 12
- Plainfield 5
- Princeton 5
- Trenton 5

—154

Pennsylvania:
- Allegheny 42
- Bethlehem 5
- Erie 6
- Harrisburg 2
- Hollidaysburg 5
- Lancaster 3
- Mercersburg 8
- Philadelphia 28
- Reading 2
- Washington 1
- Wilkes-Barre 7

—109

South Atlantic Division

Delaware:
- Wilmington 4

Maryland:
- Baltimore 9
- Port Deposit 2

— 11

District of Columbia:
- Washington 7

Virginia:
- Hampden-Sidney 0
- Lexington 0
- Norfolk 0

— 0

West Virginia 0

North Carolina:
- Asheville 2

South Carolina 0

Georgia:
- Atlanta 0
- Savannah 1

— 1

Florida 0

South Central Division

Kentucky:
- Danville 2
- Louisville 8

— 10

Tennessee:		Michigan:	
Memphis	7	Detroit	6
Nashville	0	Grand Rapids	2
	— 7	Saginaw	2
			— 10
Alabama:		Wisconsin:	
Demopolis	1	Milwaukee	4
Mobile	0		
Montgomery	3	Minnesota:	
Tuscaloosa	1	Duluth	2
	— 5	Faribault	5
Mississippi	0	Minneapolis	9
			— 16
Louisiana:			
New Orleans	2	Iowa:	
		Burlington	1
Texas:		Dubuque	2
Austin	7	Oskaloosa	1
Dallas	1	Sioux City	4
	— 8		— 8
Arkansas:		Missouri:	
Little Rock	4	Kansas City	3
		St. Louis	14
Oklahoma	0		— 17
Indian Territory	0	North Dakota	0
		South Dakota:	
North Central Division		Sioux Falls	2
Ohio:			
Akron	7	Nebraska:	
Cincinnati	8	Omaha	2
Cleveland	18		
Columbus	2	Kansas	0
Dayton	3		
Gambier	2	Western Division	
Youngstown	11	Montana:	
	— 51	Butte	1
		Helena	1
Indiana:			— 2
Fort Wayne	0		
Indianapolis	7	Wyoming	0
Lima	9		
	— 16	Colorado:	
		Denver	5
Illinois:			
Chicago	40	New Mexico	0
Rock Island	1		
	— 41	Arizona	0

Utah:		Insular Territories and Dependencies	
Salt Lake City	0	Hawaii:	
		Honolulu	4
Nevada	0		
		Foreign	
		England:	
Idaho	0	London	5
		France:	
Washington:		Paris	3
Tacoma	2		
		Germany:	
		Berlin	1
Oregon:		Dresden	6
Portland	5	Frankfort	1
		Strassburg	0
			— 8
California:			
Belmont	4	Switzerland:	
Los Angeles	4	Geneva	3
San Mateo	7		
	— 15		1817

The following table classifies the candidates for examination according to residence:

TABLE II

Candidates for Examination Classified according to Residence

North Atlantic Division		North Central Division	
Maine	22	Ohio	55
New Hampshire	9	Indiana	12
Vermont	12	Illinois	46
Massachusetts	128	Michigan	10
Rhode Island	2	Wisconsin	12
Connecticut	75	Minnesota	12
New York	920	Iowa	10
New Jersey	201	Missouri	12
Pennsylvania	129	North Dakota	2
	—1498	South Dakota	4
		Nebraska	2
South Atlantic Division		Kansas	2
Delaware	4		— 179
Maryland	11		
District of Columbia	13	South Central Division	
Virginia	2	Kentucky	10
West Virginia	1	Tennessee	4
North Carolina	0	Alabama	7
South Carolina	0	Mississippi	1
Georgia	2	Louisiana	1
Florida	1	Texas	11
	— 34	Arkansas	5

Oklahoma	1		Insular Territories and Dependencies	
Indian Territory	0			
	— 40		Hawaii	5
Western Division				
Montana	3		Foreign	
Wyoming	0		Canada	1
Colorado	6		Cuba	2
New Mexico	1		England	2
Arizona	0		France	2
Utah	1		Germany	7
Nevada	0		Mexico	4
Idaho	1		Switzerland	2
Washington	4			— 20
Oregon	4		Residence not given	7
California	14			
	— 34			1817

The following table classifies the candidates for examination according to age:

TABLE III

Candidates for Examination Classified according to Age

Age	Number of Candidates
Thirteen years	1
Fourteen "	6
Fifteen "	100
Sixteen "	310
Seventeen "	482
Eighteen "	458
Nineteen "	239
Twenty "	105
Twenty-one "	53
Twenty-two "	17
Twenty-three "	10
Twenty-four "	5
Twenty-five "	4
Twenty-six "	4
Twenty-seven "	1
Twenty-eight "	3
Twenty-nine "	3
Thirty "	1
Thirty-one "	1
Thirty-two "	1
Thirty-three "	1
Thirty-four "	1
Fifty-four "	1
Age not stated	10
	1817

The following table classifies the candidates for examination according to the secondary school attended:

TABLE IV

CANDIDATES FOR EXAMINATION CLASSIFIED ACCORDING TO SCHOOLS

NORTH ATLANTIC DIVISION		
Maine:		
Guilford	High School	1
Portland	Deering High School	2
	High School	8
	The Waynflete School	5
	Westbrook Seminary	2
New Hampshire:		
Concord	St. Paul's School	11
Exeter	Phillips Exeter Academy	6
Keene	High School	1
Kingston	Sanborn Seminary	1
Lisbon	High School	1
Littleton	High School	1
Vermont:		
Bellows Falls	Bellows Falls High School	2
Burlington	High School	1
Newport	Newport Academy	1
North Bennington	North Bennington High School	1
Saxton's River	Vermont Academy	3
Springfield	Springfield High School	1
St. Albans	St. Albans High School	1
Massachusetts:		
Adams	High School	3
Andover	Phillips Andover Academy	3
	Punchard High School	1
Ashburnham	Cushing Academy	1
Boston	English High School	1
	Emerson's (Miss) School for Girls	1
	Girls' High School	1
	Winsor's (Miss) School	1
Brockton	High School	1
Cambridge	Gilman School	1
	Latin School	1
Canton	High School	2
Charlestown	Eaton Preparatory School	1
Chelsea	High School	1
Chicopee	High School	1
Dalton	High School	1
Duxbury	Powder Point School	6
Gloucester	High School	7
Great Barrington	Searles High School	1

Greenfield	High School	2
	Prospect Hill School	2
Groton	Groton High School	4
Haverhill	High School	1
Holyoke	High School	14
Hudson	High School	1
Ipswich	Manning High School	1
Lee	High School	1
Leominster	High School	1
Lexington	High School	1
Manchester	High School	1
Marblehead	High School	1
Marion	Tabor Academy	1
Marlborough	High School	1
Natick	High School	1
	Walnut Hill School	1
New Bedford	High School	1
Newburyport	High School	1
North Adams	Drury High School	3
Northampton	High School	4
Northfield	Northfield Seminary	3
Norton	Wheaton Seminary	2
Norwood	High School	6
Peabody	High School	1
Pittsfield	High School	3
	Hall School for Girls	1
Roxbury	High School	1
Salem	High School	2
Southboro	St. Mark's School	3
South Braintree	Thayer Academy	2
South Byfield	Dummer Academy	2
Springfield	Central High School	4
	French-American Academy	1
	MacDuffie School	1
	The Elms	1
Stockbridge	High School	2
Swampscott	High School	2
Uxbridge	High School	1
Wakefield	High School	1
Ware	High School	3
Watertown	Cambridge Country School	1
Westboro	High School	1
West Boylston	High School	1
Westfield	High School	2
West Newton	High School	1
West Springfield	High School	2
Winthrop	High School	1
Worcester	Worcester Academy	4
Rhode Island:		
Newport	St. George's School	1
Providence	Friends' School	3

Connecticut:		
Bridgeport	Courtland School	1
	High School	14
Danbury	High School	1
Enfield	High School	2
Farmington	Miss Porter's School	1
Greenwich	Greenwich Academy	2
Hartford	High School	9
Lakeville	Hotchkiss School	6
Lynn	Boxwood School	2
New Britain	High School	10
New Haven	University School	4
New London	Williams Memorial Institute	1
Norwalk	Baird's (Miss) Institute	1
	Connecticut Military Academy	2
Norwich	Norwich Free Academy	3
Pomfret Center	Pomfret School	2
Seymour	High School	1
Simsbury	High School	2
	Westminster School	1
Stafford Springs	Stafford High School	2
Stamford	Betts Academy	21
	High School	1
	Manor School	1
Stratford	High School	2
Washington	The Gunnery School	4
	Wykeham Rise	3
Waterbury	High School	1
	St. Margaret's School	1
Westport	Staples High School	1
Winsted	Gilbert School	4
Woodstock	Woodstock Academy	1
Unionville	High School	1
New York:		
Albany	High School	1
	State Normal High School	2
Auburn	Auburn Academic High School	1
Binghamton	Central High School	5
Boonville	High School	1
Briarcliff Manor	Briarcliff School	1
Brooklyn	Adelphi Academy	8
	Berkeley Institute	1
	Boys' High School	28
	Commercial High School	1
	Eastern Evening High School	1
	Erasmus Hall High School	8
	Girls' High School	7
	Heffley Preparatory School	1
	Latin School	1
	Manual Training High School	4

Brooklyn	Polytechnic Preparatory School	7
	Pratt Institute	3
Buffalo	Central High School	1
	Franklin School	2
	Lafayette High School	1
	Masten Park High School	2
	Nichols School	1
	St. Margaret's School	3
Canandaigua	Granger Place School	2
Carmel	Drew Seminary for Young Women	1
Chester	High School	1
Clinton	High School	2
Dobbs Ferry	Mackenzie School	4
Elmira	Free Academy	1
Far Rockaway	High School	1
Fulton	High School	1
Garden City	St. Paul's School	8
Gloversville	High School	3
Hempstead	High School	1
Ithaca	Cascadilla School	30
	High School	16
	University Preparatory School	5
Jamaica	High School	1
	State Normal School	1
Jamestown	High School	1
Kingston	Kingston Academy	1
Lakemont	Starkey Seminary	1
Long Island City	High School	2
Malone	Franklin Academy	1
Manlius	St. John's School	4
Medina	High School	1
Middleburgh	High School	1
Mohegan	Mohegan Lake School	4
Mount Vernon	High School	4
	Lockwood Collegiate School	5
New Brighton	Staten Island Academy	1
Newburg	Newburg Academy	5
New Lebanon	Au Sable Forks Union Free School	1
New Rochelle	High School	3
New York	Allen School	3
	Barnard Classes	5
	Barnard School for Boys	10
	Barnard School for Girls	2
	Berkeley School	9
	Blake School	2
	Brearley School	8
	Browning School	2
	Callisen's (Dr.) School	1
	Chapin Collegiate School	5
	College of the City of New York	2
	Collegiate School	6

New York	Columbia Grammar School	31
	Columbia Institute	3
	Comstock School	8
	Cooper Union	1
	Craigie School	1
	Cutler School	14
	De Lancey School	1
	De Witt Clinton High School	93
	Dwight School	9
	Eastern District High School	2
	Ethical Culture School	13
	Evening High School	1
	Finch's (Mrs.) School	1
	Friends' Seminary	5
	Gerrish's (Miss) School	6
	Groff School	4
	Hamilton Institute	6
	Harlem Evening High School	2
	High School of Commerce	5
	Horace Mann School	80
	Irving School	8
	Jacobi's (Miss) School	3
	Kohut School	4
	Lake School	1
	Le Baron Drumm School	1
	Loyola School	7
	Madison School for Girls	3
	Manhattan College	1
	Morris High School	71
	Morse and Rogers School	3
	Nathan Hale School	2
	New York Collegiate Institute	3
	New York Preparatory School	9
	Normal College	7
	Ornstein's (Miss) Classes	2
	Park Avenue School	5
	Rayson's (Misses) School	6
	Sachs's Collegiate Institute for Boys	10
	Sachs's Collegiate Institute for Girls	8
	Senftner School	2
	St. Ann's School	2
	St. John Baptist School	1
	St. Mary's School	4
	Syms School	2
	Trinity School	20
	Veltin School	2
	Wadleigh High School	25
	Woodbridge School	16
Nyack	Overlook Latin School	1
Oneonta	Oneonta Normal School	1
Ossining	Holbrook's (Dr.) School	3

Peekskill	Peekskill Military Academy	1
Pelham Manor	Hazen's (Mrs.) School	1
Poughkeepsie	High School	1
	Putnam Hall	5
	Quincy School	7
	Riverview Military Academy	6
Richmond Hill	High School	1
Rochester	Columbia School	2
	East High School	3
	Hake's (Miss) School	1
	Mechanics Institute	1
Rye	Rye Seminary	1
Saratoga	High School	1
Saugerties	High School	1
Scarsdale	St. David's Hall	1
Schenectady	High School	2
Sea Cliff	High School	1
Southampton	High School	2
Syracuse	High School	2
	Goodyear Burlingame School	1
	Jenner's Preparatory School	1
	University	1
Tarrytown	Castle (The)	4
	Hackley School	2
	Irving Institute	1
	Metcalf's (Misses) School	2
Tonawanda	High School	1
Troy	Emma Willard School	1
	High School	1
Union Springs	Oakwood Seminary	1
Utica	Free Academy	1
Watertown	High School	1
	Benfield Snyder School	1
Westfield	High School	4
Yonkers	Highcliffe Hall	1
	High School	21

New Jersey:

Atlantic City	High School	1
Atlantic Highlands	High School	1
Bayonne	High School	2
Blairstown	Blair Presbyterial Academy	3
Bloomfield	High School	4
Boonton	High School	1
Bordentown	Bordentown Military Institute	30
Dover	High School	1
East Orange	High School	13
Elizabeth	Battin High School	2
	Pingry School	4
	Vail-Dean School	1
Englewood	Dwight School for Girls	1

Englewood	High School	4
Fort Lee	Collegiate Institute of Holy Angels	6
Freehold	High School	1
Glassboro	High School	1
Hackensack	High School	3
Hoboken	High School	1
	Hoboken Academy	3
	Stevens School	3
Jersey City	Bergen School for Girls	2
	Hasbrouck Institute	6
	High School	2
Lawrenceville	Lawrenceville School	5
Montclair	High School	14
	Military Academy	4
Moorestown	Moorestown Academy	1
Morristown	High School	1
	Morristown School	7
Newark	High School	7
	Newark Academy	11
	Newark Seminary	1
New Brunswick	Rutgers Preparatory School	4
Newton	English and Classical School	2
Orange	Carteret Academy	1
	High School	3
Paterson	Graves's (Miss) School	1
	High School	6
	Hoover's (Miss) School	2
Perth Amboy	High School	5
Plainfield	Leal's (Mr.) School	1
Princeton	High School	2
	Princeton School	3
Rahway	High School	2
Red Bank	Shrewsbury Academy	2
Ridgewood	Ridgewood Preparatory School	1
Rutherford	High School	3
South Orange	Jackson's (Miss) School	2
Summit	Kent Place School	1
	Summit Academy	1
Trenton	James Preparatory School	1
	New Jersey State Model School	2
	New Jersey State Normal School	1
Westfield	High School	4

Pennsylvania:

Allegheny	Allegheny Preparatory School	8
Allentown	High School	1
Altoona	High School	1
Beaver	Beaver College Academy	1
Bellefonte	Bellefonte Academy	1
Bethlehem	Bethlehem Preparatory School	2
Braddock	High School	1

California	Southwestern State Normal School of Pennsylvania	1
Erie	High School	2
George School	The George School	1
Germantown	Friends' School	1
	Germantown Academy	1
Harrisburg	Sargeant-Bent School	2
Haverford	Haverford School	3
Hollidaysburg	Hollidaysburg Seminary	3
Johnstown	High School	1
Lancaster	Yeates School	1
Lititz	Linden Hall Seminary	1
Mansfield	Mansfield State Normal School	1
Mercersburg	Mercersburg Academy	11
Myerstown	Albright College	1
Newcastle	High School	1
Ogontz	Cheltenham Academy	1
Oil City	Earp Academy	1
	High School	1
Philadelphia	Blight School	1
	Case and Child School	1
	Central High School	1
	De Lancey School	1
	Friends' Central School	2
	Girard College	1
	High School for Girls	1
	Hill's (Miss) School	1
	Holman School for Girls	4
	William Penn Charter School	4
Pittsburg	Alinda College Preparatory School	2
	Central High School	4
	Gleim's (Miss) School for Girls	1
	Pittsburg Academy	3
	Shadyside Academy	8
	Westminster Place School	6
Pottsville	High School	1
Scranton	College Preparatory School	1
	High School	1
	Mt. St. Mary's Seminary	1
	School of the Lackawanna	1
Uniontown	High School	1
Washington	Caldwell College	1
Westtown	Westtown Boarding School	1
Wilkes-Barre	Wilkes-Barre Institute	2
Wilkinsburg	High School	1
Wyalusing	Wyalusing Public School	1
Wyncote	Chelten Hills School	1

South Atlantic Division

Delaware:

Wilmington	Friends' School	4
	Wilmington Military Academy	1

Maryland:		
Baltimore	Boys' Latin School	1
	Marston's University School	1
	Maryland State Normal School	1
	Western High School	3
Port Deposit	Jacob Tome Institute	1
District of Columbia:		
Washington	Central High School	2
	Columbia School for Boys	1
	Emerson Institute	1
	Friends' Select School	2
	McKinley Manual Training School	1
	National Cathedral School	3
	Washington School	6
	Western High School	1
Virginia:		
Alexandria	Episcopal High School	1
Norfolk	Norfolk Academy	1
Staunton	Virginia Female Institute	1
North Carolina:		
Asheville	Asheville School	2
Durham	Trinity College	1
Florida:		
Jacksonville:	Duval High School	1

SOUTH CENTRAL DIVISION

West Virginia:		
Bethany	Bethany College	1
Kentucky:		
Harrodsburg	Beaumont College	1
Louisville	High School for Boys	3
	Semple Collegiate School	3
Maysville	Hayswood Seminary	1
Tennessee:		
Memphis	Higbee School	1
	High School	1
	St. Mary's School	4
	Thomas's (Misses) School	1
Mt. Pleasant	Howard Institute	1
Alabama:		
Demopolis	High School	1
Montgomery	High School for Girls	1
	Starke's University School	2

Mississippi:		
Natchez	Stanton College	1
Texas:		
Dallas	St. Mary's Preparatory School	1
Houston	Massey Business College	1
San Antonio	San Antonio Academy	1
	West Texas Military Academy	2
Arkansas:		
Fort Smith	High School	1
Little Rock	Arkansas Military Academy	1
	Peabody High School	1

North Central Division

Ohio:		
Akron	High School	4
Canton	High School	1
Cincinnati	Collegiate School	3
	Franklin School	1
	Lapton's (Miss) School	1
	Technical School	2
Cleveland	Hathaway-Brown School	1
	Mittleberger's (Miss) School	3
	University School	10
Columbus	Central High School	1
Dayton	Common Schools	1
	Steele High School	2
Gambier	Harcourt Place Academy	1
	Kenyon Military Academy	1
Massillon	High School	1
Sandusky	High School	1
Wooster	High School	1
Youngstown	Baldwin's (Miss) School	1
	Rayen High School	8
Indiana:		
Indianapolis	Knickerbocker Hall	1
	Tudor Hall	5
Lima	Howe Military School	9
Illinois:		
Aurora	East Aurora High School	1
Chicago	Armour Institute	1
	Francis Parker School	1
	Kenwood Institute	2
	Kirkland School	1
	Lakeview High School	1
	Lewis Institute	2
	Stevân School	1
	University School	5

Chicago	University School for Boys	9
	University School for Girls	2
	Y. M. C. A. Night School	1
Hinsdale	High School	1
Macomb	High School	1
Morgan Park	Morgan Park Academy	1
Oak Park	High School	4
Springfield	High School	1
Michigan:		
Detroit	Detroit University School	2
Grand Rapids	Central High School	2
Saginaw	Arthur Hill High School	2
Wisconsin:		
La Crosse	High School	1
Milwaukee	Milwaukee Academy	2
Oshkosh	Normal School	1
Prairie du Sac	High School	1
Minnesota:		
Duluth	High School	1
Faribault	Shattuck School	6
Minneapolis	Central High School	3
	Graham Hall	1
St. Paul	Loomis's (Miss) School	1
	Mechanic Arts High School	1
Winona	High School	1
Iowa:		
Burlington	High School	1
Des Moines	West Des Moines High School	1
Dubuque	High School	2
Oskaloosa	Penn College	1
Sioux City	High School	2
Missouri:		
Kansas City	Prosso Academy	1
Kidder	Kidder Institute	1
Macon	Blees Military Academy	1
St. Louis	Central High School	1
	Manual Training School	2
	Mary Institute	1
	Normal High School	1
	Smith Academy	1
North Dakota:		
Wahpeton	High School	1
South Dakota:		
Sioux Falls:	All Saints' School	2

Nebraska:		
Omaha	Brownell Hall	1
	High School	1
Kansas:		
Topeka	Bethany College	1
Wichita	High School	1
WESTERN DIVISION		
Montana:		
Butte	High School	1
Colorado:		
Eaton	High School	1
Colorado Springs	Cutler Academy	1
	High School	1
Denver	East Side High School	3
Fort Morgan	High School	1
Washington:		
Seattle	High School	2
Tacoma	High School	1
Oregon:		
Portland	Portland Academy	3
	High School	1
California:		
Eureka	Walter Kildale's Preparatory School	1
Los Angeles	High School	1
Palo Alto	Palo Alto Academy	1
Pasadena	Throop Polytechnic Institute	1
San Francisco	California School of Mechanical Arts	1
	Lyceum Preparatory School	1
	Murison's (Miss) School	1
	University School	1
Santa Barbara	Hicks School	1
	High School	1
Hawaii:		
Honolulu	High School	1
	Oahu College	3
FOREIGN		
England:		
Petersfield	Bedales School	1
London	Kensington High School	1
Rutland	Uppingham	1
France:		
Paris	Anglo-Saxon School	1

Germany:		
Dresden	Franklin College	6
Strassburg	American College	1
Switzerland:		
Geneva	Château de Lancy	2
Private Tutors		36
Preparatory School not stated		28
Barnard Students		20
Columbia Students		15
Cornell Students		4
Massachusetts Institute of Technology Students		1
Vassar Students		5
Teachers College Students		2

The following table classifies the candidates for examination according to the class or type of preparatory school attended:

TABLE V

CANDIDATES FOR EXAMINATION CLASSIFIED ACCORDING TO TYPE OF SECONDARY SCHOOL ATTENDED

TYPE OF SCHOOL	NUMBER OF SCHOOLS	NUMBER OF CANDIDATES
Public high schools	215	688
Academies and endowed schools	47	299
Private schools	247	700
	509	1687

In this table no account is taken of candidates already admitted to college or of candidates from institutions in regard to which the secretary is without complete and accurate information.

The following table shows the several colleges and scientific schools to which the candidates for examination declared themselves to be seeking admission:

TABLE VI

INSTITUTIONS TO WHICH ADMISSION WAS SOUGHT BY CANDIDATES FOR EXAMINATION

Amherst College	3
Brown University	3
Bryn Mawr College	27
Case School of Applied Science	1

Colgate University		4
Colorado School of Mines		1
Columbia University		749
Columbia College	236	
Schools of Applied Science	215	
Barnard College	183	
Teachers College	9	
College of Physicians and Surgeons	43	
Columbia Students	41	
Department not stated	22	
Cornell University		251
Academic Department	31	
Technical Schools	184	
Law School	3	
Cornell Students	4	
Department not stated	29	
Dartmouth College		3
Harvard University		7
Haverford College		1
Lehigh University		4
Leland Stanford, Jr., University		4
Massachusetts Institute of Technology		128
Institute of Technology students		2
Michigan School of Mines		1
Mount Holyoke College		94
New York University		7
University College	1	
School of Applied Science	4	
Law School	1	
Department not stated	1	
Oberlin College		1
Princeton University		20
Princeton College	5	
Green Scientific School	13	
Department not stated	2	
Purdue University		11
Phillips Andover Academy		1
Smith College		29
Stevens Institute of Technology		1
St. Stephen's College		1
Syracuse University		1
Trinity College		1
Union University		7
University of California		1
University of Chicago		1
University of Illinois		1
University of Indiana		1
University of Maine		1
University of Michigan		7
University of Pennsylvania		6
Vassar College		157

Vassar College students		2
Wellesley College		129
Wells College		1
Wesleyan University		1
Williams College		12
Woman's College of Baltimore		8
Worcester Polytechnic Institute		2
Yale University		20
Yale College	10	
Sheffield Scientific School	9	
Department not stated	1	
Preference not stated		104
		1817

The number of separate institutions in this table is 42, as against 27 last year. The names of 17 institutions, to which there are 20 applicants for admission, appear this year for the first time. It is evident that there is a growing tendency thruout the country on the part of institutions that have adopted the certificate system to make use of the Board's examinations in the case of candidates to whom, for any reason, the certificate system is inapplicable.

It is interesting in this connection to notice that the number of candidates taking the Board's examinations with a view to qualifying for admission to Leland Stanford, Jr., University has increased from two to four, the corresponding figure for the University of Michigan has increased from four to seven, and for Purdue University it has increased from one to eleven.

The Work of the Readers

As in the past, the work of the readers was done at the offices of the Board in New York. The reading in each subject was performed by a committee of specialists, who as a rule began their work by a discussion of the question-papers set in their subject. It was not unusual to begin the actual reading by circulating among all the readers in the same subject a number of answer-books which were rated independently by the different readers. A comparison of the results led to discussion and settled any doubtful points that deserved special consideration. The number of readers serving in connection with the examinations of this year was 78. In 1903 the corresponding number was

65; in 1902, 54; and in 1901, 39. The names of the readers for the present year are given in the following list:

BOTANY

Willard Winfield Rowlee, Assistant Professor of Botany, Cornell University
Cornell University, B. L., 1888, and D. Sc., 1893.

Elsie Kupfer, Teacher of Biology, Wadleigh High School, New York, N. Y.
Columbia University, A. B., 1899, and A. M., 1901.

CHEMISTRY

James Flack Norris, Assistant Professor of Organic Chemistry, Massachusetts Institute of Technology
The Johns Hopkins University, A. B., 1892, and Ph. D., 1895.

Charles Morse Allen, Teacher of Chemistry, Pratt Institute, Brooklyn, N. Y.
Wesleyan University, B. A., 1882, and M. A., 1886.

Victor John Chambers, Tutor in Organic Chemistry, Columbia University
University of Rochester, B. S., 1895; The Johns Hopkins University, Ph. D., 1901.

Charles Henry Ellard, Tutor in Analytical Chemistry, Columbia University
Columbia University, A. B., 1897, and A. M., 1900.

DRAWING

Samuel Osgood Miller.....Tutor in Drawing, Columbia University
Columbia University, C. E., 1895.

George Holston, Teacher of Drawing, Columbia Grammar School, New York, N. Y.

ENGLISH

William Tenney Brewster, Adjunct Professor of English, Columbia University
Harvard University, A. B., 1892, and A. M., 1893.

Margaret Ball.....Instructor in English, Mount Holyoke College
Mount Holyoke College, A. B., 1900; Columbia University, A. M., 1903.

Ralph Hartt Bowles, Teacher of English, The Phillips Exeter Academy, Exeter, N. H.
Harvard University, A. B., 1893, and A. M., 1896.

Armour Caldwell.....Assistant in English, Columbia University
Columbia University, A. B., 1902.

Daniel B. Duncan....Teacher of English, Columbia Grammar School, New York, N. Y.
Upper Iowa University, Ph. B., 1890.

William Echard Golden, Teacher of English, Polytechnic Preparatory School, Brooklyn, N. Y.
Indiana University, A. B., 1888, and A. M., 1890.

Grace Harriet Kupfer, Teacher of English, Park Avenue School, New York, N. Y.
The Normal College, New York, N. Y., A. B., 1892, New York University, A. M., 1900.

Clark Sutherland Northup, Assistant Professor of the English Language and Literature, Cornell University
Cornell University, A. B., 1893, and Ph. D., 1898.

Ralph Curtis Ringwalt, Lecturer in Public Speaking, Columbia University
Harvard University, A. B., 1895, and LL. B., 1901.

Edith Winthrop Mendall Taylor, Instructor in English, Wellesley College
Radcliffe College, A. B., 1897.

FRENCH

Albert Schinz.....Associate in French Literature, Bryn Mawr College
University of Neuchâtel, B. A., 1888, and M. A., 1889; University of Tübingen, Ph. D., 1893.

Luther Herbert Alexander, Tutor in French, The College of the City of New York
University of Toronto, A. B., 1883, and A. M., 1885.

Frank Elbert Brooks, Instructor in French, Teachers College, Columbia University
Cornell University, A. B., 1890.

Marie Karcher Brooks, Teacher in Horace Mann School, New York, N. Y.

Victor Emmanuel François, Instructor in French, The College of the City of New York
University of Brussels, A. B., 1887; University of Michigan, A. M., 1902.

Virginia Newcomb, Teacher of French and German, Short Hills School, Short Hills, N. J.
Columbia University, A. B., 1900, and A. M., 1902.

Cornelia Hephzibah Bulkley Rogers, Associate Professor of Romance Languages, Vassar College
Wellesley College, A. B., 1884; Yale University, Ph. D., 1894.

Louis Alexandre Roux, Teacher of French, Spanish, and Latin, Newark Academy, Newark, N. J.
Brown University, A. B., 1894.

GEOGRAPHY

Richard Elwood Dodge, Professor of Geography, Teachers College, Columbia University
Harvard University, A. B., 1890, and A. M., 1894.

William Wallace Clendenin, Teacher of Physiography, Wadleigh High School, New York, N. Y.
Missouri State University, B. Sc., 1886, and M. Sc., 1889; Harvard University, A. M., 1892.

GERMAN

Frank Vogel, Associate Professor of Modern Languages, Massachusetts Institute of Technology
Harvard University, A. B., 1887, and A. M., 1892.

Emilie A. Flintermann....Instructor in German, Mount Holyoke College
University of Michigan, Ph. B., 1898.

George Maxwell Howe.....Instructor in German, Cornell University
Indiana University, A. B., 1894; Cornell University, Ph. D., 1901.

August Prehn, Teacher of German, Columbia Grammar School, New York, N. Y.
University of Münster, Ph. D., 1883.

Arthur Frank Joseph Remy, Instructor in the Germanic Languages and Literatures, Columbia University
The College of the City of New York, A. B., 1830; Columbia University, A. M., 1897, and Ph. D., 1901.

Mélanie Constanze Richardt, Teacher of German, The Collegiate School, New York, N. Y.

Rudolph Tombo, Sr.....Tutor in German, Barnard College
University of Rostock, Ph. D., 1870.

Frederick H. Wilkens, Assistant Professor of German, New York University
The Johns Hopkins University, A. B., 1884; University of Leipzig, Ph. D., 1890.

GREEK

William Everett Waters, Professor of Greek Language and Literature, New York University
Yale University, B. A., 1878, and Ph. D., 1887.

Agnes Baldwin, Teacher of Latin and Greek, Barnard School for Girls, New York, N. Y.
Columbia University, A. B., 1897, and A. M., 1900.

William Wright Fisher, Teacher of Greek and English, The Collegiate School, New York, N. Y.
Wesleyan University, A. B., 1894; Harvard University, A. B., 1895; New York University, A. M., 1898, and Ph. D., 1900.

Roscoe Guernsey.....Tutor in Greek, Columbia University
Union College, A. B., 1896; The Johns Hopkins University, Ph. D., 1901.

Grace Harriet Macurdy....Associate Professor of Greek, Vassar College
Radcliffe College, A. B., 1888; Columbia University, Ph. D., 1903.

Katharine Campbell Reiley, Teacher of Greek and Latin, Veltin School, New York, N. Y.
Vassar College, A. B., 1895; Columbia University, A. M., 1902.

HISTORY

Herman Vandenburg Ames, Assistant Professor of American History, University of Pennsylvania
Amherst College, A. B., 1888; Harvard University, A. M., 1890, and Ph. D., 1891.

Elizabeth Briggs, Teacher of History, Dr. Julius Sachs's Collegiate Institute, New York, N. Y.
Graduate of Harvard Annex, 1887; Cornell University, A. M., 1891.

Sarah Louise Hadley.....Instructor in History, Vassar College
Wellesley College, A. B., 1896; Columbia University, A. M., 1903.

Arthur Charles Howland, Instructor in History, Teachers College, Columbia University
Cornell University, A. B., 1893; University of Pennsylvania, Ph. D., 1897.

George Daniel Luetscher, Instructor in History, The George School, George School, Pa.
University of Wisconsin, B. L., 1898; University of Pennsylvania, Ph. D., 1902.

Albert Edward McKinley, Professor of History, The Temple College, Philadelphia, Pa.
University of Chicago, Ph. B., 1896; University of Pennsylvania, Ph. D., 1900.

George Douglas Robins, Teacher of History, Riverview Military Academy, Poughkeepsie, N. Y.
Wesleyan University, A. B., 1898; New York Law School, LL. B., 1904.

LATIN

Nelson Glenn McCrea.....Professor of Latin, Columbia University
Columbia University, A. B., 1885, A. M., 1886, and Ph. D., 1888.

Charles Joseph Deghuée, Teacher of Latin, Trinity School, New York, N. Y.
Columbia University, A. B., 1884, A. M., 1885, and L. H. D., 1886.

Susan Fowler.....Teacher of Latin, Brearley School, New York, N. Y.
Bryn Mawr College, A. B., 1895.

Susan Braley Franklin, Teacher of Greek and Latin, Ethical Culture School, New York, N. Y.
Bryn Mawr College, A. B., 1889, and Ph. D., 1895.

George Benjamin Hussey, Teacher in the Lyon School, New York, N. Y.
Columbia University, A. B., 1884; The Johns Hopkins University, Ph. D., 1887.

Friedrich Otto Koenig, Principal of Dr. Julius Sachs's Collegiate Institute, New York, N. Y.
University of Munich, J. U. D., 1887.

Mary Corwin Lane....Assistant in Greek and Latin, Swarthmore College
Cornell University, A. B., 1898.

Edwin Gaylord Warner, Teacher of Latin, Polytechnic Preparatory School, Brooklyn, N. Y.
Amherst College, A. B., 1885; New York University, Ph. D., 1892.

John Calvin Watson.....Instructor in Latin, Cornell University
Harvard University, A. B., 1894, A. M., 1900, and Ph. D., 1902.

Gertrude L. Wolff, Teacher of Latin, Park Avenue School, New York, N. Y.
Columbia University, A. B., 1896.

MATHEMATICS

Robert Woodworth Prentiss, Professor of Mathematics and Astronomy, Rutgers College
Rutgers College, B. Sc., 1878, and M. Sc., 1881.

Charles Earle Biklé, Adjunct Professor of Mathematics, Teachers College, Columbia University
Dickinson College, A. B., 1886, and A. M., 1889.

Elsa Bowman, Teacher of Mathematics, Brearley School, New York, N. Y.
Bryn Mawr College, A. B., 1896.

Robert Arthur Bright, Teacher of Mathematics, Paterson High School, Paterson, N. J.
Yale University, Ph. B., 1896.

Hiram Henry Denio, Teacher of Mathematics, Collegiate School, New York, N. Y.
Cornell University, B. S., 1898.

Charles Savage Forbes....Assistant in Mathematics, Columbia University
Columbia University, A. B., 1901, A. M., 1903, and Ph. D., 1904.

John R. Gardner, Teacher of Mathematics, Irving School, New York, N. Y.
Upper Iowa University, B. S., 1890; State University of Iowa, C. E., 1894; Upper Iowa University, M. S., 1900.

William Alan Johnson, Teacher of Mathematics, Hasbrouck Institute, Jersey City, N. J.
Illinois Wesleyan University, Ph. B., 1904.

Ernest H. Koch, Jr., Teacher of Mathematics, Mackenzie School, Dobbs Ferry, N. Y.
University of Pennsylvania, B. S., 1897.

Wilfrid Ewart MacDonald, Instructor in Mathematics, Massachusetts Institute of Technology
University of Tennessee, A. B., 1901.

Richard Morris, Instructor in Mathematics and Graphics, Rutgers College
Rutgers College, B. Sc., 1899, and M. Sc., 1902.

Gertrude Smith.....Instructor in Mathematics, Vassar College
Vassar College, A. B., 1897, and A. M., 1903.

Virgil Snyder....Assistant Professor of Mathematics, Cornell University
Iowa State College, B. Sc., 1889; University of Göttingen, Ph. D., 1894.

Roxana H. Vivian.....Instructor in Mathematics, Wellesley College
Wellesley College, A. B., 1894; University of Pennsylvania, Ph. D., 1901.

PHYSICS

Arthur Willis Goodspeed, Professor of Physics, University of Pennsylvania
Harvard University, A. B., 1884; University of Pennsylvania, Ph. D., 1889.

Joseph M. Jameson, Teacher of Physics, Pratt Institute, Brooklyn, N. Y.
Cornell University, Ph. B., 1893.

George Braxton Pegram.....Tutor in Physics, Columbia University
Trinity College (North Carolina), A. B., 1895; Columbia University, Ph. D., 1903.

SPANISH

Cornelia Hephzibah Bulkley Rogers, Associate Professor of Romance Languages, Vassar College
Wellesley College, A. B., 1884; Yale University, Ph. D., 1894.

Louis Alexandre Roux, Teacher of French, Spanish, and Latin, Newark Academy, Newark, N. J.
Brown University, A. B., 1894.

The readers in mathematics began their work at half-past nine a. m. on Tuesday, June 21; the readers in French, German, and Spanish began their work on Wednesday morning; the readers in Latin, on Wednesday afternoon; those in physics, chemistry, and history, on Thursday morning; in Greek, and drawing, on Thursday afternoon; in English, on Friday afternoon; and in botany and geography, on Saturday afternoon. Except for a few answer-books that were delayed in transmission, the work of the readers in all subjects was completed by July 1.

The first installment of the certificates was mailed to the candidates on July 5, and the last installment, with the exception of a small number of irregular cases and, of course, of the certificates of candidates examined in Europe and in Hawaii, was mailed on July 9.

As usual, a considerable number of candidates failed to write their examination numbers upon their answer-books, or wrote them incorrectly. The number of such cases was, however, decidedly less than a year ago. There is no doubt that as the work of the Board goes on compliance with its various requirements and forms is secured in increasing degree.

Results of the Examinations

The following table shows the results of the examinations, and is of considerable interest when taken in connection with the similar tables published in previous reports:

TABLE VII

	Number of Candidates	Ratings 90-100 %	Ratings 75-89 %	Ratings 60-74 %	Ratings 50-59 %	Ratings 40-49 %	Ratings 0-39 %	Ratings 60-100 %	Ratings 50-100 %	Ratings 40-100 %
English										
a. Reading	1033	3.5	29.4	37.9	13.1	7.1	9.0	70.8	83.9	91.0
b. Study	923	4.5	22.0	36.2	14.7	10.2	12.5	62.6	77.3	87.5
	1956	*4.0*	*25.9*	*37.1*	*13.8*	*8.5*	*10.6*	*67.1*	*80.9*	*89.4*
History										
a. Ancient	236	4.7	14.5	39.4	20.3	11.4	9.8	58.5	78.8	90.2
b. Mediæval and Modern	60	1.7	5.0	45.0	11.7	21.7	15.0	51.6	63.3	85.0
c. English	371	1.6	14.6	34.8	18.6	15.7	14.8	50.9	69.5	85.2
d. American	386	2.6	16.8	33.9	21.0	14.8	10.9	53.3	74.3	89.1
	1053	*2.7*	*14.8*	*36.0*	*19.4*	*14.7*	*12.2*	*53.7*	*73.1*	*87.8*
Latin										
a. i. Grammar	769	6.1	29.5	30.3	15.0	10.2	8.9	65.9	80.9	91.1
ii. Composition	719	6.2	18.3	27.7	7.2	10.7	29.9	52.2	59.4	70.1
b. Cæsar	455	6.6	24.9	36.7	9.7	8.8	13.5	68.0	77.7	86.5
c. Cicero	653	7.2	29.2	31.1	13.5	6.4	12.6	67.5	81.0	87.4
d. Virgil, Æneid, I-VI	462	6.1	40.9	28.2	6.7	7.1	11.0	75.2	81.9	89.0
e. Nepos	16	6.3	—	68.7	—	—	25.0	75.0	75.0	75.0
f. Sallust	19	5.3	15.8	52.7	5.3	10.5	10.5	73.7	79.0	89.5
g. Ovid	16	6.3	12.5	18.7	—	—	62.5	37.5	37.5	37.5
h. Virgil, Ecl. and Georg.	4	—	25.0	25.0	—	—	50.0	50.0	50.0	50.0
i. Virgil, Æneid, VII-XII	1	—	100.0	—	—	—	—	100.0	100.0	100.0
k. Cicero, Am. and Sen.	3	—	—	100.0	—	—	—	100.0	100.0	100.0
l. Advanced Composition	461	2.1	15.6	34.9	8.9	11.5	26.9	52.7	61.6	73.1
m. Sight Translation	539	6.1	23.4	28.4	10.4	12.1	19.7	57.8	68.2	80.3
	4117	*5.9*	*25.6*	*30.8*	*10.3*	*9.5*	*17.6*	*62.0*	*72.9*	*82.4*
Greek										
a. i. Grammar	169	12.4	20.7	28.4	12.4	7.1	18.9	61.6	74.0	81.1
ii. Composition	165	4.8	20.0	35.0	5.5	9.7	24.9	59.9	65.4	75.1
b. Xenophon	176	8.5	31.2	26.7	9.7	10.2	13.6	66.5	76.2	86.4
c. Homer, Iliad, I-III	127	18.9	44.9	22.0	3.9	3.1	7.1	85.9	89.8	92.9
d. Homer, Iliad, VI-VIII	9	44.5	33.3	22.2	—	—	—	100.0	100.0	100.0
f. Advanced Composition	122	7.4	19.7	29.5	11.5	12.3	19.7	56.5	68.0	80.3
g. Sight Translation	149	11.4	31.5	33.5	8.7	8.1	6.7	76.5	85.2	93.3
	917	*10.6*	*27.7*	*29.3*	*8.6*	*8.4*	*15.3*	*67.7*	*76.3*	*84.7*
French										
a. Elementary	661	4.0	22.0	33.8	12.9	13.0	14.4	59.7	72.6	85.6
b. Intermediate	339	.3	10.3	35.5	23.0	14.5	16.4	46.1	69.1	83.6
c. Advanced	55	—	—	3.6	7.3	20.1	69.1	3.5	10.8	30.9
	1046	*2.7*	*17.1*	*32.7*	*15.7*	*13.8*	*17.8*	*52.7*	*68.4*	*82.2*
German										
a. Elementary	693	6.9	26.1	34.9	7.9	11.0	13.1	68.0	75.9	86.9
b. Intermediate	304	3.3	23.4	39.8	12.5	10.2	10.9	66.4	78.9	89.1
c. Advanced	48	—	8.3	25.0	16.7	10.4	39.6	33.3	50.0	60.4
	1045	*5.6*	*24.5*	*35.9*	*9.7*	*10.7*	*13.7*	*65.9*	*75.6*	*86.3*
Spanish	18	—	22.2	38.9	11.1	16.7	11.1	61.1	72.2	88.9
Mathematics										
a. Elementary Algebra										
i. To Quadratics	1060	10.8	20.0	20.1	11.8	12.4	16.0	50.8	71.6	84.0
ii. Quadratics, etc	1004	9.7	19.2	30.6	12.3	12.2	15.8	59.7	72.0	84.2
iii. Progressions, etc.	500	7.8	13.0	22.8	7.8	13.2	35.4	43.6	51.4	64.6
b. Advanced Algebra										
i. Series	63	—	1.6	30.2	12.7	14.3	41.3	31.7	44.4	58.7
ii. Theory of Equations	67	—	1.5	32.8	13.4	15.0	37.3	34.3	47.7	62.7
c. Plane Geometry	994	7.4	14.7	28.4	11.2	12.9	25.5	50.4	61.6	74.5
d. Solid Geometry	322	4.3	9.0	25.5	10.9	16.2	34.2	38.7	49.6	65.8
e. Trigonometry										
i. Plane	271	4.8	20.3	38.4	14.4	10.7	11.5	63.4	77.8	88.5
ii. Spherical	54	1.8	16.7	33.3	16.7	14.9	16.7	51.7	68.4	83.3
	4335	*8.1*	*10.4*	*28.9*	*11.5*	*12.8*	*22.1*	*53.6*	*65.1*	*77.9*
Physics	351	5.4	21.4	45.3	10.5	11.1	6.3	72.1	82.6	93.7
Chemistry	255	1.9	11.0	43.5	15.3	17.3	11.0	67.4	82.7	89.0
Botany	18	5.6	22.2	16.7	27.8	5.6	22.2	44.4	72.2	77.8
Geography	7	—	42.9	42.9	—	—	14.3	85.7	85.7	85.7
Drawing	157	12.8	21.7	49.7	8.9	3.2	3.8	84.1	93.0	96.2
Total	*15275*	*6.1*	*21.4*	*32.6*	*12.1*	*11.1*	*16.7*	*60.1*	*72.2*	*83.3*

The average number of ratings per candidate this year is 8.4, as against 8.8 in 1903, 8.6 in 1902, and 8.1 in 1901. Sixty per cent. of the ratings assigned were 60 or above, as against fifty-eight per cent. in 1903, fifty-six per cent. in 1902, and fifty-nine per cent. in 1901.

The following table institutes a comparison between the results of the four years:

TABLE VIII

Ratings	1901	1902	1903	1904
90-100	7.1 per cent.	6.7 per cent.	6.3 per cent.	6.1 per cent.
75-89	20.2	17.8	20.0	21.4
60-74	32.0	31.4	31.9	32.6
50-59	11.2	12.4	11.8	12.1
40-49	11.7	12.4	11.1	11.1
0-39	17.8	19.4	18.9	16.7

Financial

During the year ending November 30, 1903, the income of the Board resulting from its regular operations (excluding advances by co-operating colleges toward the working capital) amounted to $8984.81. The expenditures of the Board for the same year amounted to $8994.31, leaving a deficiency for the year of less than ten dollars.

At the meeting of the Board held November 7, 1903, it was voted to make a payment of $500 on account of the loan of $3500 made to the Board during the first year of its existence.

The following financial statement indicates the operations of the Board during the year ending November 30, 1903:

TABLE IX

Financial Statement, December 1, 1902, to November 30, 1903

Receipts

Balance on hand, December 1, 1902	$2311.59	
1. Advances by co-operating colleges	1500.00	
2. Sales of volume of examination questions	213.51	
3. Sales of printed documents	42.30	
4. Sales of duplicate certificates	68.00	
5. Examination fees	8586.00	
6. Contribution of Columbia University toward expense of conducting examinations in June, 1903	75.00	
		$12,796.40

EXPENDITURES

A. Office of the secretary:			
1. Salaries		$2005.00	
2. Printing		700.95	
3. Stationery and incidentals		160.95	
4. Postage and expressage		312.22	
5. Clerical and other assistance		584.60	
6. Office furniture		9.48	
			$3773.20
B. Conduct of examinations:			
1. Examiners			
Salaries	$955.00		
Expenses	248.91		
		$1203.91	
2. Readers			
Salaries	$1975.00		
Expenses	494.96		
		$2469.96	
3. Supervisors and proctors			
Expenses		566.31	
4. Examination supplies			
Question papers, answer-books, logarithmic tables, maps, envelopes, etc		763.82	
5. Postage and expressage		217.11	
			$5221.11
Total expenses			$8994.31
Payment on account of loan			500.00
			$9494.31
Balance on hand, December 1, 1903			3302.09
			$12,796.40

It will be of interest to compare the items in the preceding statement with those in the following statement, which gives the receipts and expenses during the current fiscal year to August 31, 1904.

TABLE X

FINANCIAL STATEMENT, DECEMBER 1, 1903, TO AUGUST 31, 1904

RECEIPTS

Balance on hand, December 1, 1903	$3302.09
1. Sales of printed documents	35.00
2. Sales of duplicate certificates	72.00
3. Examination fees	9883.00
4. Contribution of Columbia University toward expense of conducting examinations in June, 1904	75.00
	$13,367.09

EXPENDITURES

A. Office of the secretary:			
1. Salaries		$1530.00	
2. Printing		641.76	
3. Stationery and incidentals		183.20	
4. Postage and expressage		378.90	
5. Clerical and other assistance		684.95	
			$3418.81
B. Conduct of examinations:			
1. Examiners			
Salaries	$955.00		
Expenses	235.73		
		$1190.73	
2. Readers			
Salaries	$2248.50		
Expenses	547.72		
		$2796.22	
3. Supervisors and proctors			
Expenses		782.27	
4. Examination supplies			
Question papers, answer-books, logarithmic tables, maps, envelopes, etc.		891.83	
5. Postage and expressage		228.27	
			$5889.32
Total expenses			$9308.13
Balance on hand, September 1, 1904			4058.96
			$13,367.09

The estimated expenses for the remainder (three months) of the fiscal year are:

Salaries	$527.50	
Printing annual report (say)	75.00	
Binding records (say)	40.00	
Stationery and incidentals (say)	25.00	
Postage and expressage (say)	40.00	
		$707.50

By vote of the Board on November 7, 1903, the sum of $10,000 was appropriated for the expenses of the current fiscal year. The operations of the Board from December 1, 1903, to August 31, 1904, have involved an expenditure of $9308.13. The estimated expenditures for the remainder of the fiscal

year, that is up to November 30, 1904, will probably bring the total expenditure almost exactly to $10,000.

The revenues of the Board up to August 31 amount to $10,065.00. During the last three months of the fiscal year they will be increased by the sales of printed documents and duplicate certificates, and also thru the amount to be received from Ginn & Co. on account of the first three volumes of examination questions. Assuming these additional revenues at $350, there will be a total income of $10,415.00, leaving a surplus on the operations of the current year of about $400 as against a deficit last year of about $10.

There can be no doubt but that the work of the Board is rapidly advancing to a self-supporting basis. It will be necessary, however, in the near future, to continue to practice every possible economy, and to call upon many who are interested in the important educational work represented by the Board to continue, for a time at least, to give the Board their assistance without financial remuneration.

Conclusion

To anyone who will consider the progress made by the College Entrance Examination Board during the past twelve months it must appear that the work of the Board is now almost ready to pass from a temporary initial state to a permanent condition. At the time that the first annual report of the secretary was issued the Board consisted of fifteen college representatives and five secondary-school representatives, all of whom belonged to the territory designated as the Middle States and Maryland. At the present time the Board consists of twenty-five college representatives and seven secondary-school representatives. From New England have come to the Board Harvard University, the Massachusetts Institute of Technology, Wellesley College, and Mount Holyoke College, together with Mr. William Gallagher as representative of the secondary schools. From the North Central States have come the Western Reserve University and the Case School of Applied Science, together with Mr. Edward L. Harris as representative of the secondary schools. A number of other colleges and universities are at present considering the desirability of seeking ad-

mission to the Board, and there is every indication that within a few years the Board will represent a still wider co-operation in the administration of admission examinations,—a co-operation in which, as at present, will still be combined the point of view of the college and the point of view of the secondary school.

Respectfully submitted,

THOMAS S. FISKE, *Secretary*

September 1, 1904

VI

DISCUSSIONS

THE COLLEGE ENTRANCE REQUIREMENTS AND THE HIGH-SCHOOL PROGRAM OF STUDIES

The requirements for entrance to college to-day stand in marked contrast to those of a generation ago when a boy was admitted to college with a training which would to-day place him not higher than the Junior year of a high-school course. Our colleges, in advancing to meet the demand of the present generation for highly trained men and women, have come to require that young men and women come from schools with a training at least two years in advance of that given a few years ago.

The most notable characteristic of this increased demand upon the school is that it is a call for an increase in quantity rather than an improvement in quality. The boy of to-day who enters college must know more things than did his father when he entered college; it is a question whether he needs to know any one thing better. In order to enter Harvard College (Harvard is used simply as an example) a boy must take examinations in English, Latin, German, French, history, algebra, geometry, and science, or in equivalents. The examinations are arranged in such a way that a boy must be kept fresh in at least six studies up to the close of the Junior year of the preparatory course. Moreover, unless credit is received for at least eight points, or, in other words, unless the boy passes the examination in at least three subjects, no credit whatever is given.

Every change in college entrance requirements necessitates a change in the school program of studies. The requirements alluded to above make it necessary for a pupil in the last two years of his preparatory course to pursue at least six studies abreast. It needs no argument to prove that the best training cannot come under a régime where a pupil must study English, Latin, German, French, mathematics, and history in one year.

The colleges themselves recognize this when they advise Freshmen to carry only four or five studies at most. In fact, many colleges permit only five studies as a maximum. The total result of the present program of studies, wherein a pupil carries six studies, is haste in preparation, dissipation of energy and interest, physical strain, or a tendency to negligence of duties, and illiteracy. Training for college work should result not simply in a modicum of knowledge ready for use in examinations, but in power and maturity, which will prepare the young man for the good things the college offers. The emphasis of the present college requirement is too much on quantity.

Two remedies suggest themselves—to reduce the number of studies required for entrance to college and raise the passing mark, or to permit a boy to take the examinations in three years instead of in two, as at present. If the first remedy suggested is applied, let the college cut out of the requirements science, history, or one of the foreign languages, and demand a higher grade of work in the requirements which remain; or, if this should seem too light a requirement, the college should demand a greater amount of ground to be covered in five studies and thereby permit the school to do some intensive work. Two years' work in one science or in history is worth more than one year's work in science and one in history. If the number of subjects required for entrance to college cannot be reduced, then must the colleges permit the examinations to be taken in three years. If ancient history and science are completed three years before a boy enters college, why should he not take examinations, and, if he passes, drop the subjects? He is not required to pursue these same studies in college. They are not required for the purpose of preparing for college work in the same lines. The necessity for haste and for a cramming process is the greatest burden of the secondary-school man. Will the colleges lend a helping hand to the schools?

VIRGIL PRETTYMAN

HORACE MANN HIGH SCHOOL,
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ALGEBRA IN ELEMENTARY SCHOOLS

Algebra will evidently soon be taught in all grammar schools as an "enrichment" of the grammar-school course in arith-

metic. The Harvard College Catalog of the current year repeats the words of the famous "Committee of Ten" of 1892, recommending "that some familiarity with algebraic expressions and symbols, including the methods of solving simple equations, be acquired in connection with the course in arithmetic."

Since the knowledge thus imparted in the grammar schools must be built upon in the high-school course it seems desirable that a standard of methods, if not of attainment, for the introductory teaching of algebra, should be stated from a high-school point of view. The following suggestions vary widely from usual practice.

Algebra can be made to appear to a pupil in the elementary school as a help to his arithmetical work: first, by the abbreviation of rules into formulæ; and secondly, by the abbreviation of "analysis" in the explanation of problems. Generalization is beyond the pupil's reach at this stage of maturity, and enough of the formal treatment of algebraic expressions and equations can be introduced under these two heads to occupy fully his awakening curiosity. He cannot, of course, accept the definition that algebra is a generalization of arithmetic, because arithmetic is to him the mathematical universe; he has nothing with which he can compare or contrast it. It must, therefore, be exhibited to him as a system of abbreviations for mathematical language; and his teacher must present some reasonable motive for its introduction into arithmetic.

The rules of mensuration furnish convenient examples for algebraic abbreviation: πD or $2\pi R$ for the circumference of a circle and $\frac{4}{3}\pi R^3$ for the volume of a sphere will appeal to this practical sense, and a discussion of approximations like $3+\frac{1}{7}-\frac{1}{800}$ for π, and $4+\frac{1}{3}\left(\frac{4}{7}\right)-\frac{1}{600}$ for $\frac{4}{3}\pi$ will furnish an opportunity for illustrating the distributive law. Again, $\sqrt{s(s-a)(s-b)(s-c)}$ for the area of a triangle whose three sides are given, $\frac{1}{2}h(b_1+b_2)$ for the area of a trapezoid and $\sqrt{a^2+b^2}$ for the hypotenuse of a right triangle; $\frac{h\pi}{4}\left[d+.62\,(D-d)\right]^2$ for gauging a cask, $prt = i$ for interest problems, $\sqrt{2gH}$ for

the velocity of water under a given head, all can be made to connect with practical everyday affairs, to give excellent practice in calculation, and to accustom the pupil to the use of algebraic symbols. Care should be taken to translate every formula into its rule, and to induce the pupil to look upon the formula as a convenient and easily remembered way of stating the rule.

The second subject for elementary school study in algebra is the solution of concrete problems by means of equations. Such study should NOT be preceded by a discussion of equations, by rules for their solution, nor by definitions of any sort or kind. The explanation or "analysis" of the problem is to be arranged systematically and abbreviated; and the directions for that process can be got from the pupil himself, as follows:

I. Make a list of all numbers that in explaining the problem would have to be described in words.

II. Assign a letter as an abbreviation for one of these numbers.

III. From the facts stated in the problem as to the relations between this number and the others, construct abbreviations for the other numbers which shall express those relations.

IV. When all such abbreviations have been made there will remain some fact expressed or implied in the statement of the problem which can be expressed as an equation, using only these abbreviations and the necessary mathematical signs.

This seems a very elaborate set of directions; but they are not of course to be "learned and applied"; if the teacher has them clearly in mind, the pupil will follow. The very simplest problems should come first, and the teacher must admit the healthy pupil's objection that he "can do it quicker by arithmetic." The algebraic method serves not to shorten the arithmetical work, but to systematize his explanations, so that they can be studied, and, later, applied to problems of greater complexity.

The familiar question "What 'll I let x equal?" can now be met by telling the pupil to try each of the numbers in his list, and to select that one which will give the simplest set of abbreviations for all. Thus in the problem

A father is six times as old as his daughter; and their united ages are 49 years. Find the ages of each,

the two numbers for abbreviation are

the number of years in the father's age
the number of years in the daughter's age

If in this list we represent the first number by x, the second number will be $\frac{x}{3}$; if we represent the second number by x, the first number will be $3x$. The pupil would choose the latter way. The remaining fact in the problem, "their united ages are forty-nine years," may now be stated as an equation:

$$6x + x = 49$$

which the beginner should translate again and again into the words which it represents; and he should treat in the same way the two succeeding equations, $7x = 49$ and $x = 7$, which lead to his solution.

The second degree of complexity is reached in the problem:

Settled an account of $51 with $2 and $5 bills, using 3 times as many fives as twos. Find the number of bills of each denomination.

Here the list of numbers to be discussed is longer,—

the number of $2 bills
the number of $5 bills
the number of dollars all the twos are worth
the number of dollars all the fives are worth

but the equation, obtained from the implied fact that all the bills together are worth $51, is still of the simplest type:

$$15x + 2x = 51$$

The next advance in difficulty introduces transposition, which is a stone of stumbling and a rock of offense.

A man is ten years older than his partner, and their united ages are 104 years. Find the age of each.

x = the number of years in the first man's age
$x - 10$ = the number of years in the partner's age
$x + x - 10 = 104$; $2x - 10 = 104$; $2x = 114$; $x = 57$

In the above solution the third equation is obtained by adding ten to each side of the second equation; the pupil should be told precisely that. It will not do to explain to him and have him explain a "rule of transposition"; he would always forget the explanation and cling to the mysterious change of sign, which becomes in his mind an unavoidable consequence of "putting over" the transposed terms.

As the difficulty of the equations increases it becomes necessary to examine very carefully the process of dealing with

them; and care must be taken to avoid negative divisors, as when the equation $x = 5$ is obtained from the equation $-3x=-15$. Such a state of things would in some cases be unavoidable under the "rule of transposition" usually given. Thus the equation $5(x+4)=14x+2$ would be solved as follows: $5x+20=14x+2$; $-9x=-18$ (transposing all known numbers to the right-hand side, all unknown numbers to the left); $x=2$ (dividing by -9). This is very bad, because the beginner can have no idea of negative numbers, and certainly not of division by them; and such a complication is unnecessary. To avoid it, we need only avail ourselves of the very oldest "rule of transposition" ever stated:

If there are subtractive terms on either side, that side is to be made complete by adding the same amount to both sides.

This is the rule which gave algebra its name; [1] and there is a sequel, not so ancient but just as important for our purposes:

In subtracting equals from equals, so as to leave only one term on each side, be careful not to subtract a larger unknown term from a smaller.

Heed to these two directions will prevent the occurrence of a negative divisor; and if the equation has a negative solution it will give that solution right end foremost and not in the form $-x=$ (a positive number). I am not sure that it is wise to make use, in this grade, of algebraic problems leading to a negative solution.

GEORGE W. EVANS

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[1] See *Century Dictionary*, article "Algebra."

VII

REVIEWS

Studies in logical theory—Edited by JOHN DEWEY, with the co-operation of members and fellows of the Department of Philosophy. The Decennial Publications of the University of Chicago. Second series. Vol. xi, xiv+300 pp. $2.50 net.

This volume marks the rise of a new movement of thought, which is destined to have a far-reaching influence over both philosophy and education. As a technical book it will not interest the average teacher; but it is of real importance to such educators and educationists as have had a philosophic training and believe that, while educational practice in its advance depends on educational theory, this theory, in turn, must have a broad basis in science and philosophy, and be subjected to the fire of logical criticism, if it is to be anything better than crude guesswork, or the postulation of traditional prejudices.

In estimating the educational importance of this collection of studies we can only indicate its general point of view, and state a few practical corollaries. It should first be remarked that the book is itself an example of sound education on the highest rounds of the educational ladder. It embodies the spirit, methods, and results of original research,—a spirit which has been carefully nurtured down to the very primary grades of the University School under the direction of Dr. Dewey. As contributors, the instructors and students are united in their joint pursuit of a common end.

We can notice but four general tendencies of the book, which are of educational importance. It may be said to stand for (1) evolution, (2) empiricism, (3) pragmatism, and (4) the value of logic as well as psychology in educational theory and practice. To justify such a classification of the book and make it comprehensible, a brief explanation will be necessary.

(1) The idea of evolution, whether of the world at large or of thought in the individual or the race, is emphasized by most of the essays. Economic, moral, and æsthetic values are also products of an evolution which is dependent upon reflection.

Character and the ability to control conditions are developments. All evolution involves a psychic factor. In the conflict of settled modes of behavior there appears something like judgment, whose function it is to solve the problems which arise. Each single thought has its evolution, which is describable as a more or less controlled growth, not as a mechanical rearrangement of fixed parts, as according to the old formal logic. It would be quite impossible to square with these views a doctrine of mere *instruction;* for the child evolves, and must be *educated, i. e.*, in his conflicts with himself or his environment, he must be led to develop the implications of his own attitudes toward new situations, to determine by reflection the true relation between his own impulses or feelings. An ultra-conservatism in education is impossible on this basis.

(2) The point of view of the *Studies* has been called empiricism, but this needs qualification. On the one hand, there is the most evident opposition to mere rationalism, such as that of the scholastic philosophy, or of *a priori* systems of metaphysics, which, scorning the ground of facts, purport to yield a deeper knowledge of reality. The same criticism would be made of any philosophy of education which is not based on a study of children, society, and actual needs and conditions. On the other hand, this point of view would insist on the fallacy of *mere* observation, mere collecting of facts. At every stage of education we are concerned not only with finding out what is given as fact (itself a difficult task, for nothing is absolutely and unequivocally given), but with reconstructing it reflectively, and generalizing from it. Thought is a deductive determination thru hypotheses of what the facts are, and an inductive determination thru the facts of general laws or modes of behavior. We must become conscious of the fact side embodied in our instincts and habits and the habits of nature in order that we may then modify these habits in response to the needs of the occasion, thus reaching a more valid theoretical or practical law. This is at once an inductive and a deductive procedure. It utilizes both the conservative and the radical tendencies of life. It tentatively assumes what is given as subject of a judgment, and for predication it selects a point of view from which this given element may be usefully

regarded or reacted upon in view of the existing conditions and needs. For every stage in education is judgmental, it involves a conscious readjustment to conditions, a new predication of a subject. Finally, this procedure is empirical in that it insists on experiment. The movement of thought and life is not from certainty to certainty, rather is it tentative and problematic. Our judgments are never isolated and complete truths. Our conclusions, reached by a deductive-inductive process, require experimental verification. As truth is about life, the test of truth is: Will it work and live in practice?—tho no single test can be regarded as final.

(3) These logical doctrines are the methodological groundwork for a system of philosophy which has a pragmatic aspect. Not meditative diversion nor the logical play of the mind is the highest motive to thinking, but the influence of cognition upon action. Thought is an instrument whose use is the adjustment of life to life, the expansion and elevation of life. Knowledge is power, as Bacon wrote. Truth is not an abstract entity having an existence apart in the eternal heavens. Truth is tested by experience and use. It is relative to the occasion, it is a function of concrete living, and, as an ideal, its purpose is to help us to live, not to draw us away from living. In its most specialized form thought, indeed, involves an abstraction from real life and its immediate values; in science and in logic, one aims at knowledge for its own sake, but this would be suicidal without an implicit reference to the ultimate use of the products.

(4) As intimated, this logic has important bearings upon the theoretical and applied education of Dr. Dewey, which is in some measure a protest against a current tendency among educators to go to the anti-logical extreme. Education is too often *merely* psychological, it is content with the mere *facts* of the child-mind and its growth, and of children's interests. Echoing Rousseau's "back to nature," and what Santayana portrays as the spirit of Whitman's poetry, it seeks to gain and inculcate control by pandering to the child's instincts and emotional tendencies. For all this a wholesome corrective is found in an educational theory that emphasizes logic. Control involves inhibition and reflection, but reflection itself demands

control. Not only must man use tools, but he must fashion and sharpen these tools. Now a fruitful method for the recitation must have a sounder basis than either tradition or the emotional impulses of pupils and teacher; it must be grounded in part on the teacher's logical comprehension of the logical processes in the child's mind.

The book under consideration, then, when its influence and its results have percolated thru highly-trained educators into our own school system, should mean (1) the more adequate training of normal students in applied logic and method, and (2) more fruitful thought on the part of school children, both in their study and in the class exercise. If education is anything more than mere imitation and blind habituation, if it consists largely in the discovery and solution of problems, then logic must have within it a growing rather than a declining influence. While modern education, on both its scientific and its humanistic sides, has been too much dominated by *intellectual* ideals, this defect is not to be remedied by flinging away intellectual discipline and retreating to the mysticism of feeling or the pleasures of activity (tho these are valid phases of life and modes of approaching Reality), but by keeping in view the relation of intellect to life as a whole. It is the cram system, information gathering, stocking the mind with useless knowledge, that is harmful; this must give way to a reflective study of the concrete interests and activities of real life.

The present book, however, is not a logic in opposition to psychology. A distinctive feature of it is the view that these two branches cannot be wholly severed. Thought must accept actual conditions and make the best of them. Its standards are based on the facts of our mental life, therefore the need of child-study is apparent. Reason and sense are not separate faculties, they rather interpenetrate as two aspects of one process. Thought is the interpretation and reconstruction of the materials given in sense and instinct, an interpretation which develops gradually, and grows out of the material under stress of special needs and conflicts.

The above is designed as an appreciation rather than a review, and the reader should not expect to find any direct reference to education in the volume here dealt with.

EDWIN L. NORTON.

UNIVERSITY OF WISCONSIN

A history of the United States for secondary schools—By J. N. LARNED. Boston: Houghton, Mifflin & Co., 1903. xxx + 701 p. $1.40 net.

During the last two or three years there has been a most noteworthy change in the character of the text-books in history offered to our public schools. Formerly it was a choice between technical manuals or childish romances; now history, raised to almost the dignity of a science, stands out at the same time as one of the most widely cultural of the subjects taught in our schools. This has been due largely to the fact that men of marked distinction as historical investigators have not thought it beneath them to open up to the youngest readers their new perspective with its widened horizon, and to offer a glimpse of the attractions that lie behind the bars of dates and the externals of constitutions.

Mr. Larned proposes to profit by this scientific activity by relying upon the manuals already in use in the primary schools to make history interesting, while he supplies the more solid material for the classes in high schools. The solid character of his book is not only to be noted from the entire absence of pictures,—an original departure in these days,—but also in the practical elimination of the purely cultural side of our history. It seems to be the author's idea that the inspiration already derived by the student from the newer sort of primary school text-book is here to be utilized in acquiring facts of the more genuine order. If history be past politics, then it is well to save the day by this interposition, for we can hardly imagine that the innate longing in the majority of our students for such a subject as is here presented will carry them very far toward its mastery. But Mr. Larned has the advantage of placing his book in a setting which gives it the best chance of success, and if a purely political history satisfies an awakened interest in the story of our country's development, the workmanship of this book should insure its wide adoption in our schools.

The greatest care has been taken to supply all the mechanism which teachers require for the proper use of a text-book in history. Topics for study are furnished with splendid lists of readings. This is, perhaps, the book's most conspicuous merit, for unlimited patience and pains must have been expended in preparing what is perhaps the fullest bibliographical apparatus

to be found in a manual of its kind. Over three hundred and fifty books are referred to with exact references, and three hundred and seventy-five topics are analyzed for reading and research. In this way the space saved from illustrations has been gained for a most practical use. The whole make-up of the book shows careful and intelligent response to the needs of the classroom. Topic headings are clearly brought out, and the maps are grouped into a sort of historical atlas at the beginning, to serve for ready reference at any time. The appendix contains, among other things, the Constitution, and statistics of presidential elections. The publishers have done their part extremely well, and the make-up of the book is distinctly pleasing in every way.

On the other hand, the style is not interesting. It lacks that geniality which vitalizes a book. The legalistic atmosphere pervades it at times, especially to the damage of some parts of colonial history. The social history and evidences of the intellectual life are inserted in a series of supplementary chapters, as appendices to each epoch, but the plan of the book as a political history should not have suggested such lifeless handling as that, for instance, of the colonial education and literature (p. 115). Better leave out this phase altogether than make it repellent by statistical treatment. Such faults, however, are rather local than general, and they are atoned for by fairly forceful treatment of the great crises, especially of the Revolution. Teachers who are looking for such a book as will cover the field of American political history will welcome Mr. Larned's manual. And not the least point in its favor is the fact that it will serve as a book of ready reference for fuller research.

J. T. Shotwell

Columbia University

First lessons in finance—By Frederick A. Cleveland, Ph. D. New York: D. Appleton & Co., 1903. xiii, 304 pp. $1.25 net.

Money, banking, and finance—By Albert S. Bolles, Ph. D., LL. D. New York, Cincinnati, Chicago: The American Book Company, 1903. 336 pp. $1.25 net.

Men who are engaged in active business often express impatience with the seeming incapacity of otherwise cultured people to comprehend even the simplest matters of finance.

It is, indeed, almost discouraging to contemplate the number of those who are well-informed on almost every other subject, but who turn from the financial columns of the daily papers as from an array of Chinese characters. Fortunately, the time has passed when one could regard his ignorance of business as a sign of superior culture. There is a demand for books which shall render intelligible the ordinary operations of private finance. The two works under review represent more or less successful attempts to meet this need. Both of them are crowded with facts which everyone ought to know; each may serve at least as an introduction to the more formal literature of the subject.

Dr. Cleveland's work (published also under the title, *Funds and their uses*) is a compact little volume, which endeavors to make clear the nature and significance of the "funds" which are the prerequisite of business activity, to describe the ordinary methods of obtaining funds, and the institutions which have been developed especially for the handling of them. Incidentally most of the common terms of finance are elucidated, and many of the most essential points of business law are touched upon. As the work is avowedly elementary, controversial matter is wholly omitted. No "problems" are brought forward to vex the reader, whose chief desire is to gain a clear view of business practice. Numerous engravings of the various forms of commercial instruments supplement admirably the descriptions given in the text. The work is for the most part clear and well written. The reviewer knows of no book better designed to meet the need for elementary financial instruction.

Dr. Bolles's *Money, banking, and finance* is an elementary treatise on American banking, written chiefly from the banker's point of view. A few pages are indeed devoted to money, but the discussion is so superficial and unscientific that the book would have been improved by their omission. Finance is treated only in its relation to banking. A great deal of interesting material is presented, and in a form that is easy of comprehension. Perhaps the author has overemphasized the risks to which the banker is exposed, unless, indeed, he intended his book as a manual for young men who expect to become bank

clerks, and who need to be informed on all possible methods of fraud which they may, in the future, encounter. Certainly, the impression left upon the reader who relies exclusively upon Dr. Bolles for his knowledge of banking will be far from favorable to the extension of banking habits. Supplemented by other literature, however, the book will prove to be of considerable value.

Unfortunately, the work shows many signs of hasty and careless composition. Thus, on page 13, we are told that coinage adds nothing to the value of gold, and that "the same truth might be shown with respect to silver, but as the explanation is different and less simple, it will be delayed." Needless to state, the explanation of this "truth" is delayed beyond the limits of the present volume. In the chapter which pretends to give a complete classification of banks, the author defines savings banks so as to exclude joint-stock savings banks, which are given no place at all in the classification, altho the author was certainly aware of their importance. Misleading statements are, however, rare; the same cannot be said of violations of rhetoric, and even grammar, which may be found wherever one chooses to look for them. "The capital of many banks has been drawn together thru the influence of two or three persons who afterward became its president, cashier, or other officer" (p. 34). "Sometimes shareholders change their names, especially women who marry. A new certificate ought then to be made to her" (p. 48) are cases in point. The reviewer might multiply instances indefinitely, but the above are sufficient to indicate the slovenliness of composition that characterizes the whole book. This is especially a matter for regret, since the work might otherwise have proved quite satisfactory as an elementary text-book on banking. A teacher will naturally hesitate to place in the hands of his pupils a text-book which embodies all that is reprehensible in English composition.

ALVIN S. JOHNSON

COLUMBIA UNIVERSITY

Geography of commerce—By SPENCER TROTTER. New York: Macmillan Co., 1903. xxiv+410 p. $1. 10 net.

The *Geography of commerce*, by Spencer Trotter is the first of a series of text-books for high schools in which it is pro-

posed to lay a basis for solid commercial education. The organization of commercial courses in our high schools has made a distinct call for such books, which are designed to present the material and suggest the method by which a rigorous educational discipline can be secured from these studies. The present book takes a long step in the direction of such a result. It has collected and organized a large amount of matter and outlined a distinct method of treatment.

The design of basing commercial geography upon physiographic causes as well as upon human agencies, so as to show the combined result of these two forces, is well marked. The book itself gives many illustrations of this connection, but it will remain for the teacher and student to work out many more connections between physiography and man's activity. In view of the fact that this is the controlling point of view, it seems to us desirable to have given more prominence to the tracing out of connections between man and his physical environment.

The great breadth of the subject and the large number of countries treated give to the book a sort of encyclopedic character. In this respect it is an enlargement of the data furnished by the standard grammar-school geography. But while it is well to base it upon the previous course of study in grammar schools, it is not well to adopt the faults of the grammar-school books. Books of a distinct encyclopedic character are the best neither for grammar schools nor for high schools. They are apt to be dull, because the treatment of each topic must be too brief to be interesting.

In reading the *Geography of commerce* we are constantly impressed with the feeling that more information is desirable to set the subject into clearer light. If the study of the book should have the effect upon children of causing them to work up the reference material suggested, it would be admirable. But there is considerable danger that this result will be lost, because most teachers will insist upon memorizing the facts of the text-book rather than upon enlarging the main topics by the wise use of reference materials. The only solution that seems to offer itself to this problem is to reduce the number of topics treated and to provide for an enlarged treatment of the more important ones. A first-class teacher, in using this

book, will probably do this, throwing stress upon the important topics and concentrating the reference studies upon them. This requires, however, a slighting of the details in lesser topics, or even a total omission of them, so as to secure time for a fuller study of leading topics.

The question is whether it would not be better to provide in the text-book itself for a richer and fuller treatment of important topics, omitting altogether many of the lesser topics. This would give to the book a less encyclopedic character, but a concentration of thought upon a few large units of study. Such a plan as this would enable the teacher to provide for a larger use of reference material, which must be excluded by the time devoted to a multitude of lesser topics. The strong tendency of teachers to require a memorizing of the text-book statements is one excuse for emphasizing this point.

The "Suggestions for a working method" at the beginning show a well-matured plan for conducting the work, and a wise and stimulating use of the abundant reference material suggested. The whole book is evidently based upon a broad experience, and for this reason is likely to prove very useful as a text.

The book is well illustrated, and the plan of graphic representation is so clear as to show at a glance the quantity and relative magnitude of products, the history and changes in production, and the relative values in different countries.

The tendency to make the products, commerce, etc., of the United States the basis of comparison is pedagogically sound, and, while it is a source of pride in our achievements, is also a means of wholesome criticism.

The questions at the end of each chapter are very significant, not of a routine character upon the mere facts of the text, but requiring thoughtfulness, originality, and the intelligent use of reference materials in the solution of problems.

Several of the chapters show a comprehensive treatment of national and world commerce, and testify to the dignity of this subject as a high-school study.

This volume marks a distinct advance in the treatment of one of those new subjects that have lately secured a place in the high-school curriculum.

C. A. McMurry

De Kalb, Ill.

An elementary German reader—By FREDERICK LUTZ, A. M., Professor in Albion College. New York: Silver, Burdett & Co. ix, 329 p. $1.

In spite of the numerous Readers already available, there is room for a new one that can justify its production. Teachers tire of using the same text-book year after year, and their requirements differ according to method and circumstances. The author of this Reader states that his purpose was "to make a comprehensive book that should be no less useful than entertaining." And it may fairly be regarded as entertaining, for the selections are varied and interesting, if not always judicious; some of the most important have appeared in previous books of the kind. They comprise 60 pages of "Short selections," the first four of which are printed in both German and Roman type on opposite pages. The poems occupy 37 pages, and include "Das Lied vom braven Mann" and "Der Graf von Habsburg." Three "Longer Prose Texts," including "Das Wirtshaus im Spessart" and "Der Kleine Klaus und der Grosse Klaus," fill 55 pages. The five short "Historical selections" are all from the same author (Lüttringhaus) and deal with the Napoleonic period of German history. The story of Prussia's humiliation at Tilsit is hardly a suitable introduction for the student who may get here his first chapter of German history. The book concludes with several "Geschäftsbriefe" and "Freundschaftsbriefe," a good feature. To be "comprehensive," it should have included a short comedy, which most teachers consider necessary in a course of elementary reading.

Whatever credit may be due the author of this Reader is for the work of selection. The editorial work is so perfunctory and inaccurate as seriously to impair the usefulness of the book. The notes consist largely of translations of single words, which properly belong in the vocabulary, and are occasionally repeated there; what principle has determined their inclusion or omission does not appear. Such meager grammatical information as the notes contain is sometimes awkwardly or obscurely expressed, sometimes positively incorrect, as: "Many German verbs with the prefixes *ab-, an-, be-, bei-, . . . er- . .* govern the dative in German"; or, "With *wegen, halber, um . . . willen,* the genitives of the personal pronouns are *meinethalben,*" etc.

Intentionally, as noted above, and unintentionally, the vocabulary is incomplete. A test of ten pages shows seven words not given in either Notes or Vocabulary. Easy compounds are to be looked up under their component parts. The orthography of text and vocabulary is sometimes inconsistent, antiquated forms having been retained in one place and discarded in the other. The vocabulary has *Oeffnung* and *Los*, the text, *Öffnung* and *Loos*. Accents are seldom given, even when most needed. The English renderings are sometimes faulty and archaic, as: "*Mauern*, to mure; *verwegen*, audacious, temerarious." The vocabulary, as a whole, gives the impression of being merely a word-list, compiled from a mediocre dictionary, with little attention to the occurrence of the meanings given; *e. g.*, "*Knecht*, servant, slave; jack. *Schlüssel*, key; clef." It is particularly lacking in the helps essential for beginners. Verbs not weak and regular are simply marked *irr.*, all such being grouped in an alphabetical list, which is characterized by the same incompleteness and inaccuracy; *e. g.*, "*beklimmen*, to oppress; *dürfen*, to dare, to be allowed, to need; *schlagen*, to slay, beat." The vocabulary prints "*schaffen*, to create, procure, contrive," without further information. No distinction whatever is made between separable and inseparable compounds, even in the case of "doubtful" prefixes; *e. g.*, "*übersetzen* to translate; to pass over; ferry over." No information is given as to the auxiliaries of tense; none as to the government of prepositions.

It does not take great scholarship to make an acceptable Elementary Reader; it does, however, demand painstaking accuracy and such educational instinct as keeps constantly in view the *user* of the book.

WILLIAM ADDISON HERVEY.

COLUMBIA UNIVERSITY.

Biblische Geschichten—Selections from Wiedemann's *Wie ich meinen Kleinen die biblischen Geschichten erzählte*—Edited, with Questions and Vocabulary, by LEWIS A. RHOADES, Ph. D., Professor at the University of Illinois. New York: Henry Holt & Co., 1902. iv, 93 p. 30 cents.

This little book is a successful attempt to provide the elementary student of German with reading-matter of familiar content. The ten stories are all taken from the Old Testament, and are obviously better suited for use as a text-book

than the Bible itself would be. By reason of the judicious selection of material and the manner of treatment no possible objection can be made to their use for purposes of secular instruction. The style is charmingly simple, quite within reach of the child, but equally certain to please the older student.

At a certain stage of the learner's progress much can be gained by the use of such a text as this, for it will make practical additions to his vocabulary and encourage him to get the meaning out of the German, without constant resort to translation. The book is likewise admirably adapted to sight translation, if that exercise be preferred, but the teacher will miss a valuable opportunity if he entirely neglect reading and explanation in German. The *Biblische Geschichten* have this advantage over the fairy-tales that are sometimes used for such purposes, that the language is modern and idiomatic, and teaches no archaisms or dialectic peculiarities which must be subsequently unlearned.

The editor has provided questions intended to be "suggestive rather than exhaustive," on the subject-matter of the text, to aid in "free reproduction," either oral or written. The vocabulary has been prepared with particular reference to the needs of the beginner, and is very well done. The only omission noted is that of *haschte . . . zusammen*, p. 29, l. 16. On p. 19, l. 2 read *Paar* instead of *paar*.

WILLIAM ADDISON HERVEY.

COLUMBIA UNIVERSITY

Practical lessons in human physiology—By JOHN I. JEGI, M. S. New York: The Macmillan Company, 1903. xvii+343 p. $1.00.

This is one of the best school physiologies that have appeared for some time. The arrangement of topics is very good, the treatment is clear and interesting, tho, in some places, somewhat too brief. The emphasis placed on personal and public hygiene makes the book more practical and more valuable than most school physiologies. It is unfortunate that the author felt constrained to accede to the unreasonable demands of certain State laws regulating the instruction of physiology in the public schools. In conforming to these regulations the author has greatly diminished the value of an otherwise good

book. He devotes altogether too much space to the treatment of alcohol, and makes many statements contrary to the facts as presented by leading scientists on the subject. The author makes this positive statement, "Alcohol is not a food, but a poison." But Professor Atwater, who has made most careful experiments on the nutritive value of alcohol, says, "Alcohol is one of the foods which, when taken into the body, either build up tissue or yield energy." Again, the author is misinformed when he makes the statement that "young men on the baseball, football, track teams, and rowing crews in the best universities of this country are not allowed to drink alcoholic beverages of any kind." It is well known that ale is used as a beverage at the training tables of the various athletic teams in most of our best universities. These erroneous statements about alcohol place the book in the class referred to in the report of the Committee of Fifty, when it says, "Much of the so-called scientific temperance instruction in public schools is unscientific and undesirable, and is not in accord with the opinions of the large majority of the leading physiologists of Europe."

GEORGE L. MEYLAN.

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Zoölogy: descriptive and practical—By B. P. COLTON. Boston: D. C. Heath & Co., 1903. Part I, Descriptive, pp. 375, Figs. 201, $1.; Part II, Practical, pp. 204, 60 cents. Also a one-volume edition, $1.50.

Part II of this new school-book on zoölogy is a revised edition of the well-known *Practical zoölogy*, published in 1886. This was the pioneer laboratory guide for high-school zoölogy, which closely followed the lines of the then prevailing college zoölogy based on Huxley and Martin's *Practical biology*. The characteristic features of the original book remain essentially unchanged, but there have been added directions for study of living animals in field and laboratory along the lines of the natural history, which has again become popular for secondary schools. The "Suggestions to teachers" have been extended to form a separate pamphlet (price, 25 cents).

The descriptive part has been developed as a text-book to accompany the guide to the practical work. In actual practice this should be Part II, the laboratory work preceding and lay-

ing the foundation for the recitation. Corresponding to the order of practical study, the descriptive text deals with arthropods, annulates, mollusks, chordates, protozoans, cœlenterates, echinoderms, and "worms." These are presented from the point of view of general zoölogy; and we find well-selected facts relating to general structure, classification, general functions, embryonic development and life-history, ecological and economic relations, and much interesting general information of the kind commonly called "natural history."

The form of the book allows great flexibility, and it may easily be adapted to any course after the teacher's own ideas. Some teachers will prefer to omit certain types in the practical work, which is probably too extensive even for a course thruout a school year. Others will certainly abbreviate the anatomical studies which, in places, involve details of questionable value in secondary education. Still others will omit much of the practical studies of natural history, because many of these will be involved in the nature-studies of the elementary school. Finally, the reviewer would suggest practical work in physiology in the early lessons, not only for the sake of a more efficient presentation of this most important phase of zoölogy, but also because that science taught by the practical method gives the best basis for the human physiology, which properly belongs in high schools. In beginning zoölogy, it is not safe to deal in general terms with physiological processes, assuming that pupils have gained and retained in the special courses in human physiology the accurate conceptions of functional activities which are of fundamental importance in the study of the general principles of zoölogy. We need a closer connection between the zoölogical teaching and the kind of practical physiology which the same author and publishers have previously contributed to education.

Like every school-book, Colton's new *Zoölogy* has its little faults when judged from the point of view of the teacher who has developed his own ideas on teaching a special subject; but on the whole it appears, after careful reading, to be one of the best and most practicable books now available for general zoölogy in secondary schools.

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